Vol. 47.] [No. 10.

THE

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OFFICIAL GAZETTE

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Publishers' Catalogues.

This Office would be pleased to receive from manufacturers and publishers such catalogues, circulars, price-lists, or other advertisements relating to the sciences and mechanical arts as are published by them for gratuitous distribution; but notice is hereby given such manufacturers or dealers who feel disposed to send their publications that not less than three copies should be forwarded in order that the subjects may be properly indexed, classified, and subclassified in the Scientific Library for convenient and ready reference.

Issue of June 4, 1889.

Patents	441—No. 404,373 to No. 404,813, inclusive.	
Designs	21—No. 19,125 to No. 19,145, inclusive.	
Trade-Marks	42—No. 16,661 to No. 16,702, inclusive.	
Labels	6—No. 5,926 to No. 5,931, inclusive.	
Reissues	None.	
Total issue	510	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	2	....	Nebraska	....	....
Arizona Territory	....	....	Nevada	....	....
Arkansas	....	....	New Hampshire	1	....
California	13	1	New Jersey	36	4
Colorado	3	1	New Mexico Terri'y	....	....
Connecticut	16	2	New York	79	9
Dakota Territory	1	....	North Carolina	1	1
Delaware	2	....	Ohio	26	2
District of Columbia	7	....	Oregon	....	....
Florida	....	....	Pennsylvania	48	2
Georgia	2	....	Rhode Island	....	....
Idaho Territory	1	....	South Carolina	1	....
Illinois	36	1	Tennessee	5	....
Indiana	14	1	Texas	4	....
Iowa	4	....	Utah Territory	....	....
Kansas	10	....	Vermont	4	....
Kentucky	2	....	Virginia	1	....
Louisiana	....	3	Washington Terri'y	1	1
Maine	3	....	West Virginia	2	....
Maryland	7	2	Wisconsin	8	2
Massachusetts	32	5	Wyoming Terri'y	1	....
Michigan	20	....	U. S. Army	....	....
Minnesota	5	1	U. S. Navy	....	....
Mississippi	....	....			
Missouri	22	3	Total to citizens of the United States	423	41
Montana Territory	3	....			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Australia	....	....	Germany	6	2
Austria-Hungary	....	....	Hawaii	....	....
Barbadoes	....	....	Italy	....	....
Belgium	2	....	Mexico	....	....
Brazil	....	....	New South Wales	1	....
Canada	11	....	Norway	1	....
Canary Islands	....	....	Scotland	2	....
Colombia, U. S. of	....	....	Sweden	1	....
Cuba	1	4	Switzerland	2	....
Denmark	....	....	Victoria	....	....
Ecuador	....	....			
England	12	1	Total to citizens of foreign countries	39	7
France	....	....			

DESIGNS.

19,125.—BOTTLE.—*William Baker, Jr.*, Baltimore County, Md. Application filed April 29, 1889. Serial No. 309,116. Term of patent 14 years.

19,126.—SEGGAR.—*Thomas A. Bell*, Trenton, N. J. Application filed January 12, 1889. Serial No. 295,991. Term of patent 14 years.

19,127.—FIRE-PLACE LINING.—*Edward L. Caldy*, Philadelphia, Pa., assignor to *Gilbert Combs, John Bawden*, and *John H. Bawden*, Freehold, N. J. Application filed January 9, 1889. Serial No. 295,887. Term of patent 7 years.

19,128.—INHALER TUBE.—*James F. Chesebro*, Knoxville, Tenn. Application filed February 11, 1889. Serial No. 299,524. Term of patent 14 years.

19,129.—LATCH CASE.—*Rodolphe W. F. Christesen*, New Britain, Conn., assignor to *The Russell & Erwin Manufacturing Company*, same place. Application filed April 1, 1889. Serial No. 305,606. Term of patent 14 years.

19,130.—DRESSING-CASE.—*Timothy J. Collins*, Toledo, Ohio, assignor to *T. J. Collins & Co.*, same place. Application filed February 25, 1889. Serial No. 301,121. Term of patent 3½ years.

19,131.—TEXTILE FABRIC.—*Lewis Haslam*, Ravenswood, near Bolton, county of Lancaster, England. Application filed April 9, 1889. Serial No. 306,592. Term of patent 14 years.

19,132 to 19,138, inclusive.—OIL-CLOTH.—*Charles T. Meyer* and *Victor E. Meyer*, Bergen, N. J., assignors to *Edward C. Sampson*, New York, N. Y. Applications filed May 11, 1889. Serial Nos. 310,458 to 310,464, inclusive. Term of patents 3½ years.

19,139.—METALLIC ROOFING PLATE.—*Longley Lewis Sagendorph*, Cincinnati, Ohio. Application filed April 29, 1889. Serial No. 309,054. Term of patent 14 years.

19,140.—TOY MONEY-SAFE.—*Herman Scheller*, Jersey City, N. J. Application filed May 1, 1889. Serial No. 309,291. Term of patent 7 years.

19,141.—CANISTER.—*Rudolph Standinger*, Brooklyn, N. Y. Application filed May 1, 1889. Serial No. 309,292. Term of patent 7 years.

19,142.—TOY CAP-EXPLODER.—*Orrin A. Wheeler*, Chicago, Ill. Application filed April 2, 1889. Serial No. 305,767. Term of patent 3½ years.

19,143.—BOX.—*Horace F. Whitman*, Philadelphia, Pa. Application filed April 13, 1889. Serial No. 306,189. Term of patent 3½ years.

19,144.—CIGAR BOX.—*William P. Wilcox*, Cicero, N. Y. Application filed January 14, 1889. Serial No. 296,361. Term of patent 7 years.

19,145.—LATTICE OR MESH WORK.—*Francis A. Winslow*, Chicago, Ill. Application filed May 9, 1889. Serial No. 310,147. Term of patent 7 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

16,661.—WHISKY.—*M. & K. Gottstein*, Seattle, Wash. Ter. Application filed April 3, 1889. Used since March 1, 1888.
"The words 'PACIFIC CLUB,' and the representation of a canoe with an Indian seated therein."

16,662.—NEWSPAPER.—*Jerome A. Hart*, San Francisco, Cal. Application filed April 10, 1889. Used since March 25, 1877.
"The word 'ARGONAUT.'"

16,663.—TEA.—*The P. H. Kelly Mercantile Company*, St. Paul, Minn. Application filed March 19, 1889. Used since March, 1888.
"The conventional representation of a chrysanthemum having a gold disk and petals of alternate crimson and black, associated with the words 'THE ROYAL CHOP.'"

16,664.—PERFUMED ARTICLES, SUCH AS SOAP, SATCHET-POWDERS, AND THE LIKE.—*Ladd & Coffin*, New York, N. Y. Application filed April 19, 1889. Used since March 15, 1889.
"The words 'GOYA LILY.'"

16,665.—OPTICAL GOODS OF ALL KINDS.—*Andrew J. Lloyd*, Boston, Mass. Application filed April 1, 1889. Used since September 8, 1888.
"The representation of a lion issuant."

16,666.—CIGARS.—*Manuel Lopez & Co.*, Havana, Cuba. Application filed April 17, 1889. Used since December 23, 1885.
"The words 'FLOR DE REMATES.'"

16,667.—CIGARS.—*Manuel Lopez & Co.*, Havana, Cuba. Application filed April 17, 1889. Used since January 19, 1885.
"A monogram of the initials 'M L Y CA.'"

16,668.—CIGARS.—*Manuel Lopez & Co.*, Havana, Cuba. Application filed April 17, 1889. Used since December 15, 1884.
"The words 'VICTOR HUGO.'"

16,669.—CIGARS—*Manuel Lopez & Co.*, Havana, Cuba. Application filed April 17, 1889. Used since November 18, 1884.
"The name 'LA VENCEDORA.'"

16,670.—WHEAT-FLOUR.—*D. & A. Luckenbach*, Bethlehem, Pa. Application filed March 8, 1889. Used since March 1, 1881.
"The representation of an anchor and the word 'ANCHOR.'"

16,671.—PILLS.—*Rensalier MacFarland*, Genoa, Ohio. Application filed March 1, 1889. Used since August 10, 1888.
"A pictorial illustration of the globe with a sphere located above the same, and two figures of Indians holding herbs above the globe and pointing toward the sphere, with the words 'COMBINE THE TWO AND YOU HAVE THE BEST' arranged above the sphere and the words 'ON THE' between the sphere and the globe."

16,672.—FACE-WASH.—*James P. McGill*, South Bend, Ind. Application filed April 8, 1889. Used since February 1, 1889.
"The words 'LANGTRY LOTION.'"

16,673.—CIGARS, SMOKING-TOBACCO, AND CIGARETTES.—*Pine Needle Cigar Company*, Freehold, N. J. Application filed April 23, 1889. Used since November, 1888.
"The representation of a pine branch and cone."

16,674.—BITTERS.—*Clara Pickard*, Philadelphia, Pa. Application filed May 1, 1889. Used since April 1, 1889.
"The words 'PICKARD'S' and 'BITTERS' in connection with the picture of MRS. S. A. PICKARD."

16,675.—GAME-BOARD.—*Sylvester T. F. Sterick*, Washington, D. C. Application filed April 10, 1889. Used since September, 1888.
"The word 'LAWNAQUET.'"

16,676.—CIGARS.—*F. Suarez & Son*, New Orleans, La. Application filed April 2, 1889. Used since July, 1885.
"The words 'MORNING STAR' and the representation of a six-pointed star placed within the circle of the sun, with rays of sun diverging in every direction from the circle."

16,677.—PLUG AND CUT TOBACCOS FOR SMOKING AND CHEWING.—*Thompson, Moore & Co.*, New York, N. Y. Application filed March 26, 1889. Used since March, 1879.
"The words 'HARD A PORT.'"

16,678.—CARBONATED GINGER.—*White Rock Mineral Spring Company*, Waukesha, Wis., and Chicago, Ill. Application filed May 3, 1889. Used since August, 1887.
"The word 'GINGERETTE.'"

16,679.—WATCH-MOVEMENTS.—*American Waltham Watch Company*, Waltham, Mass. Application filed April 12, 1889. Used since January 1, 1888.
"The letters and words 'A. W. W. Co., RIVERSIDE, WALTHAM,' and a circular design or frame-work inclosing them."

16,680.—MINERAL WATERS, GINGER-ALE, LEMONADE, TONIC DRINKS, AND SIMILAR LIQUIDS.—*The Arcadian Mineral Spring Company*, Waukesha, Wis. Application filed May 13, 1889. Used since January, 1885.
"The word 'ARCADIAN.'"

16,681.—REMEDY FOR PILES.—*Carrie E. Ashmead*, Jersey City, N. J. Application filed April 19, 1889. Used since November 15, 1888.
"The letters 'C. S. P. R.'"

16,682.—BUTTER.—*I. N. Ballou & Co.*, Boston, Mass. Application filed April 15, 1889. Used since April 1, 1887.
"The words 'BAY STATE.'"

16,683.—PAPER FOR LEDGERS.—*L. L. Brown Paper Company*, Adams, Mass. Application filed April 29, 1889. Used since January 1, 1876.
"The word 'ADVANCE.'"

16,684.—CIGARS.—*Buckingham, Swope & Co.*, Baltimore, Md. Application filed April 29, 1889. Used since March 3, 1882.
"The picture of a buck bucking a ham suspended from a broken branch, accompanied by the words 'MY NAME.'"

16,685.—MASK-FASTENERS.—*Charles H. Dessart*, New York, N. Y. Application filed April 22, 1889. Used since April 1, 1889.
"The representation of two masks of the human face."

16,686.—SPRING-MATTRESSES AND SPRINGS FOR THE SAME.—*Benj. Fitch & Co.*, New York, N. Y. Application filed April 25, 1889. Used since February 1, 1889.
"The word 'IMPERIAL.'"

16,687.—NEWSPAPER.—*Henri Gerard*, New York, N. Y. Application filed April 24, 1889. Used since January, 1869.
"The words 'MANUFACTURER AND BUILDER.'"

16,688.—BISCUITS, CRACKERS, WAFERS, AND SIMILAR ARTICLES.—*J. D. Gilmor & Co.*, New York, N. Y. Application filed April 15, 1889. Used since March 15, 1889.
"A border or frame having a smooth glassy non-transparent surface like that of a coating of vitreous enamel, and surrounding the display face or front of cans containing biscuit, crackers, and wafers."

16,689.—GLUE.—*Julius Herold*, Monzingen, Prussia, Germany. Application filed April 24, 1889. Used since April 1, 1879.
"The letters 'J. H.'"

16,690.—ELECTRIC BELTS OR BANDS.—*John E. Hetherington*, New York, N. Y. Application filed April 16, 1889. Used since March, 1887.
"The word 'BI-POLAR.'"

16,691.—COFFEE SCOURERS AND POLISHERS.—*Hercules Manufacturing Company*, Cardington, Ohio. Application filed April 25, 1889. Used since February 15, 1889.
"The word 'HERCULES.'"

16,692.—CEMENTS OR COMPOSITIONS FOR ROOFING AND PAVING.—*James B. Hinchman*, Denver, Colo. Application filed April 15, 1889. Used since December 1, 1888.
"The word 'PIONEER.'"

16,693.—COUGH-MIXTURE.—*Francis M. Jaques*, New London, Conn. Application filed April 23 1889. Used since October, 1888.
"The words 'ROCK POLYPODE and the representation of three fern-leaves with crossed stems."

16,694.—FEATHER PILLOWS.—*Frank E. Little*, St. Louis, Mo. Application filed April 25, 1889. Used since January, 1887.
"The word 'GLOBE.'"

16,695.—FEATHER PILLOWS.—*Frank E. Little*, St. Louis, Mo. Application filed April 25, 1889. Used since January, 1887.
"The word 'ROYAL.'"

16,696.—FEATHER PILLOWS.—*Frank E. Little*, St. Louis, Mo. Application filed April 25, 1889. Used since November, 1884.
"The word 'STAR' or the symbol of a star."

16,697.—KNITTING-COTTON.—*J. Turner Morehead & Co.*, Leaksville, N. C. Application filed April 22, 1889. Used since 1877.
"The words 'IRVIN RIVER.'"

16,698.—OPTICAL INSTRUMENTS.—*Charles F. Prentice*, New York, N. Y. Application filed April 12, 1889. Used since November 5, 1886.
"The word 'OPTICIST.'"

16,699.—KID GLOVES.—*J. Roeckl*, Munich, Germany. Application filed April 24, 1889. Used since 1839.
"The representation of a draped figure with the human face and the horns and feet of a goat and a scroll with the initials 'J. R.'"

16,700.—INSECT-POWDERS AND LIKE PREPARATIONS.—*William Henry Sayre*, Newark, N. J. Application filed April 24, 1889. Used since March 1, 1889.
"The word 'BUGBANE.'"

16,701.—APPLIANCES FOR TAKING PHOTOGRAPHS.—*Charles Spiro*, New York, N. Y. Application filed April 15, 1889. Used since April 1, 1889.
"The composite word 'ANTI-DARK-ROOM.'"

16,702.—BICYCLES, TRICYCLES, AND KINDRED VEHICLES AND THEIR PARTS AND ATTACHMENTS.—*Starley Brothers*, Coventry, England. Application filed April 1, 1889. Used since March, 1887.
"The word 'PSYCHO.'"

LABELS.

5,926.—Title: "CHASE" (FOR CARRIAGE ROBES, LAP ROBES, &c.)—*L. C. Chase & Co.*, Boston, Mass. Application filed May 13, 1889.

5,927.—Title: "CONGER'S NEWARK TRAY."—*Walter M. Conger, Jr.*, Newark, N. J. Application filed May 9, 1889.

5,928.—Title: "ROCK POLYPODE SYRUP."—*Francis M. Jaques*, New London, Conn. Application filed April 23, 1889.

5,929.—Title: "EAST INDIA PILE REMEDY."—*Samuel J. Ketcham*, Chicago, Ill. Application filed May 9, 1889.

5,930.—Title: "CAKES AND JUMBLES."—*Justin J. Langlés*, New Orleans, La. Application filed May 9, 1889.

5,931.—Title: "GINGER SNAPS."—*Justin J. Langlés*, New Orleans, La. Application filed May 9, 1889.

DISCLAIMERS.

267,192.—*James M. Grant*, Hartford, Conn. ART OF REELING AND WINDING SILK AND OTHER THREAD. Patent dated November 7, 1882. Disclaimer filed May 27, 1889, by the patentee.

Enters his disclaimer—

"To so much of the claims as does or might make such claims apply to a skein which, by reason of being coated with gum, or by reason of the manner of its lacing, or for any other reason, is not in condition for dyeing for ordinary manufacturing purposes."

403,560.—*Charles T. Schoen*, Philadelphia, Pa. CENTER BEARING-PLATE FOR RAILWAY CARS. Patent dated May 21, 1889. Disclaimer filed May 27, 1889.

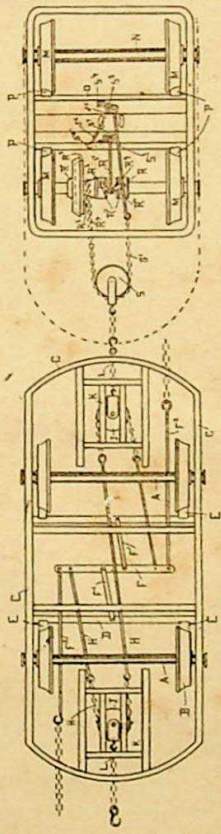
Enters his disclaimer to the word "annular" in the first line of the first claim of said patent, which word was intended to precede "bearing-pieces" in the third line of said claim, so that the claim would read—

"1. Center bearing-plates of wrought metal, constructed with concentric ribs, combined with interposed *annular* bearing-pieces substantially as described."

PATENTS

GRANTED JUNE 4, 1889.

404,373. CAR-BRAKE. WILLIAM L. ABBOTT and VIRGIL C. KILLIN, Chicago, Ill. Filed Dec. 24, 1888. Serial No. 294,529. (No model.)



Claim.—1. The combination of two fixed collars with the axle of a car, movable friction-plates between them, toggle-bars connected with such friction-plates, and a brake-chain secured to such friction-plate, so that by operating the toggle-bars the friction-plate is locked against the fixed collar and the chain is wound up to set the brakes.

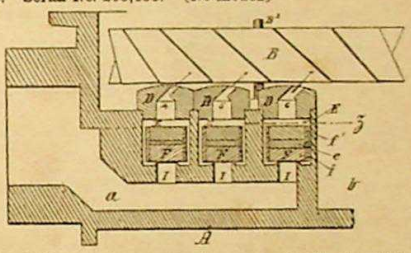
2. The combination of a car with a pivoted brake-lever and connections therefrom to the shoes, pulleys at the opposite ends of the cars supported so as to move along the length of the car, chains therefrom connecting the systems of contiguous cars, and a system of chains and rods extending from one end of such lever over both pulleys to the opposite end of the lever.

3. The combination of a car with a pivoted brake-lever and connections therefrom to the shoes, pulleys and sliding frames therefor on opposite ends of the cars and near the middle of the ends of such car, said frames adapted to slide along the length of the car, chains connecting the pulleys of adjacent cars, and a system of chains and rods extending from one end of such pivoted lever over both pulleys to the opposite end of such lever.

4. The combination of two fixed collars with the axle of a car, a movable friction-plate between them, toggle-bars connected with such friction-plate and to another point along the axle, and a brake-chain secured to such movable friction-plate, said friction-plate shaped so as to serve as a drum, substantially as and for the purpose set forth.

5. The combination of a fixed collar or friction-plate with the axle of a car, a movable collar or friction-plate thereon and formed like a drum, toggle-bars secured at one point to the axle and at another to the movable friction-plate, so that by operating the toggle-bars the movable and fixed friction plates or collars are locked together, and a chain secured to the drum so as to be wound thereon to set the brakes.

404,374. ROTARY METER. PHINEHAS BALL, Worcester, Mass., assignor to the Union Water Meter Company, same place. Filed Jan. 2, 1889. Serial No. 295,155. (No model.)



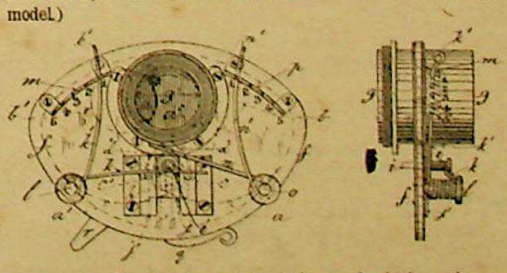
Claim.—1. In a rotary meter for gas or fluids, the delivery-nozzle or mouth-piece having the inclined orifice formed for concentrating and directing the stream of gas or fluid, in combination with a chamber anterior to said mouth-piece, having an inlet-passage surrounded by a valve-seat, and the weighted reacting valve disposed within said chamber between the inlet and nozzle for closing against said seat and stopping said inlet-passage in opposition to the entering flow, substantially as and for the purpose set forth.

2. In a gas or fluid meter, the combination of the rotatable measuring-wheel, the delivery mouth-piece having a concentrating-orifice for directing the gas or fluid against said wheel, the valve-chamber beneath said mouth-piece having an inlet-passage with valve-seats, as described, and a valve-puppet loosely disposed within said chamber between the inlet and delivery passages, whereby said delivery-passage is automatically closed when the pressure or active force of the current increases beyond the normal limit of resistance for which said valve is adjusted, substantially as hereinbefore set forth.

3. In a gas or fluid meter, the combination, with the rotatable wheel, of the series of mouth-pieces D, having passages increasing in size in succession, arranged for directing gas or fluid against said wheel for imparting motion thereto, and the series of resistance-valves F, arranged in chambers beneath said mouth-pieces and respectively controlling the passages, said valves being severally weighted or adjusted to resist different degrees of pressure, substantially as and for the purpose set forth.

4. In a gas or fluid meter, the combination, substantially as described, with the body or casing provided with inlet and outlet channels, and the rotatable measuring-wheel mounted within a chamber in the case, of a series of valve-chambers, a series of mouth-pieces having orifices of different caliber fitted to said valve-chambers and respectively disposed for directing a current of gas or fluid against said wheel, and automatic pressure-resisting valves disposed within said valve-chambers, severally weighted or adjusted for resisting different pressures in their relative order as the size of the orifices which they severally control, for the purpose set forth.

404,375. SHUTTER FOR PHOTOGRAPHIC CAMERAS. ROBERT E. M. BAIN, St. Louis, Mo. Filed Jan. 14, 1889. Serial No. 296,300. (No model.)



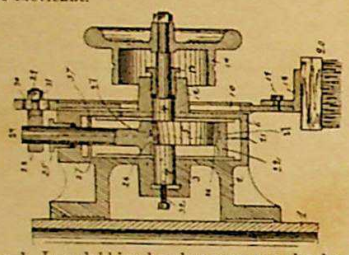
Claim.—1. In apparatus for opening and closing photographic-

camera shutters, the combination of two springs having different tensions and means for altering the respective tensions of said springs, with a pin passing through the shutters and through slots in the shutter-casing, substantially as shown, and for the purpose described.

2. In apparatus for opening and closing photographic-camera shutters, the combination of two springs having different tensions, each of said springs passing spirally round a fixed stud and engaging in either one of a series of notches formed in a fixed bar, with the pin passing through the shutters and through vertical slots in the shutter-casing, substantially as shown, and for the purpose described.

404,376. DABBING-BRUSH APPARATUS FOR COMBING-MACHINES. JAMES L. BALLANTYNE, Newton, Mass., assignor to the Nonantum Worsted Company, of Massachusetts. Filed Oct. 19, 1888. Serial No. 288,600. (No model.)

Brief.—On the interior of the box bracket and cover are curved ribs, which serve to prevent the splashing of the lubricant against the stuffing-box in the top of the apparatus and to insure the proper circulation of the lubricant.

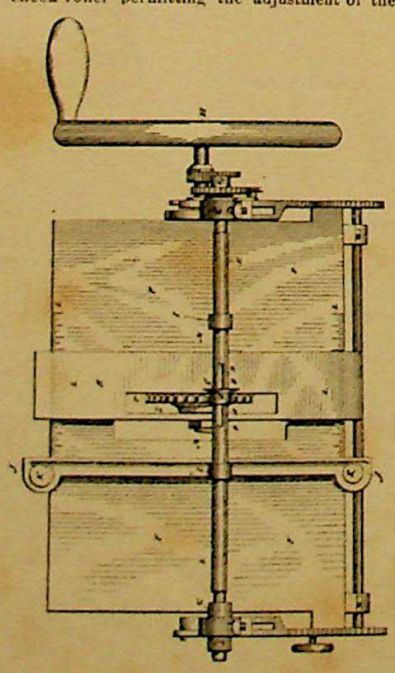


Claim.—1. In a dabbing-brush apparatus, the box 2 and box-cover 6, and the cam-shaft 4, journaled in bearings in said parts and provided with the cam or eccentric 5, the carrier and its sliding brush-carrying plate combined with the ribs 37 38 on the interior of said box and cover, substantially as and for the purpose set forth.

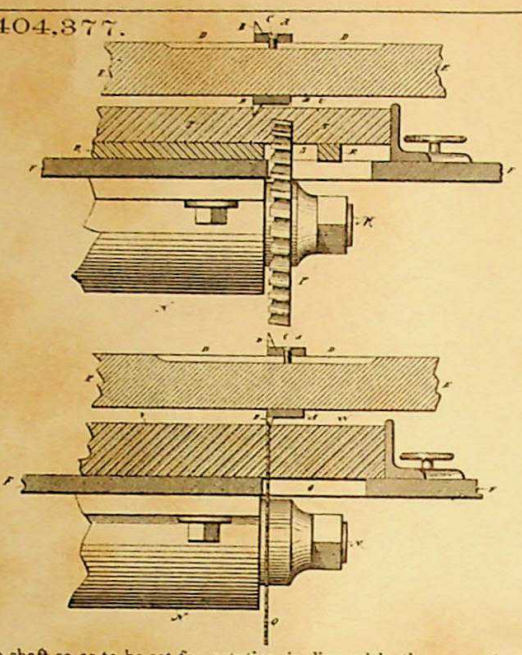
2. In a dabbing-brush apparatus, the box 2, having bearing 3 and regulating-screw 32, and the cover 6, having stuffing-gland 13, combined with the rotary shaft 4, having the cam or eccentric 5, and the carrier 22, having upwardly-projecting spindle 24 guided in the upper part of said box and cover and provided with a stuffing-gland 25, substantially as and for the purpose set forth.

404,377. CONVERTIBLE MACHINE FOR GROOVING AND SAWING WOOD. ELBRIDGE F. BARNES, New Haven, Conn. Filed May 29, 1886. Serial No. 203,594. (No model.)

Claim.—In a convertible machine for grooving and sawing wood, the combination, with a feed-shaft provided with a short longitudinal groove, of a check-roller having teeth at its edge and flat on one side and conical on the other side, and provided with a collar carrying a set-screw entering the groove in the shaft upon which the check-roller is mounted, a table F, a gage J, loose rollers I, mounted upon the shaft, movable bearings for the opposite ends of the shaft, gearing for rotating the shaft, and a tool-shaft located below the table and adapted to interchangeably carry a grooving-plow and a saw, the described grooving of the feed-shaft and the described construction of the check-roller permitting the adjustment of the roller on

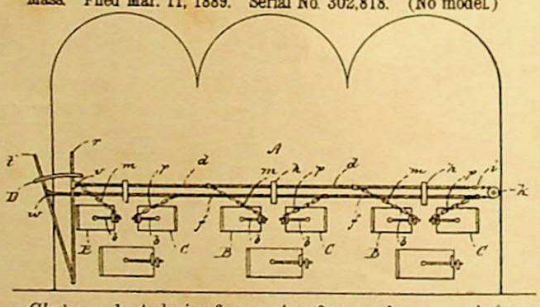


404,377.



the shaft so as to be set for rotation in line with the saw when the machine is converted for sawing and for rotation out of line with the plow when the machine is converted for plowing, substantially as set forth.

404,378. BOILER-FURNACE. EDWARD BARRETT, Fall River, Mass. Filed Mar. 11, 1889. Serial No. 302,818. (No model.)



Claim.—1. A device for opening furnace-doors, consisting of a rod arranged to slide on the furnace-front and connected with said doors by cords or chains, substantially as described.

2. In a device of the character described, the combination of a rod fitted to slide on the furnace-front in the direction the furnace-door swings, with a chain connecting the rod with the door-latch, and a lever for actuating said rod, substantially as described.

3. In a device of the character described, the combination of a furnace, a rod fitted to slide in guide-rolls on the front thereof, a chain connecting the door-latch with said rod at a point opposite the center thereof, and a lever pivoted to said rod and the furnace-front, substantially as and for the purpose set forth.

4. In a device of the character described, the combination of a furnace provided with doors opening in opposite directions, two rods fitted to slide in the furnace-front and having their corresponding ends connected by a chain passing over a fixed pulley, chains connecting the latches of doors opening in like directions with one of said rods, and an actuating-lever for each rod, whereby the doors may be opened or closed as said rods are moved, substantially as described.

5. The furnace A, provided with doors B, having latches *b*, in combination with the rod *d*, fitted to slide between rolls *g* on the furnace-front, the chains *m*, connecting said latches and rod, and the lever *r*, for actuating said rod, substantially as described.

6. The furnace A, provided with doors B C, having latches *b*, in combination with the rods *d f*, fitted to slide between rolls *g* on the furnace-front, the chains *m p*, connecting said latches and rods, the chain *i* and pulley *k*, and the levers *r t*, all being arranged to operate substantially as described.

404,379. STRAW-CUTTER. WILLIAM C. BAYLESS, Mossy Creek, Tenn. Filed July 14, 1888. Serial No. 279,911. (No model.)

Claim.—1. The combination, in a straw-cutter, of two opposing knives, one movable toward the other and each comprising a series of cutting-dentations, with those of one knife alternating with and adapted to pass those of the other, a feed-box, and a bracing-support having a zigzagged portion corresponding substantially to the dentations of one

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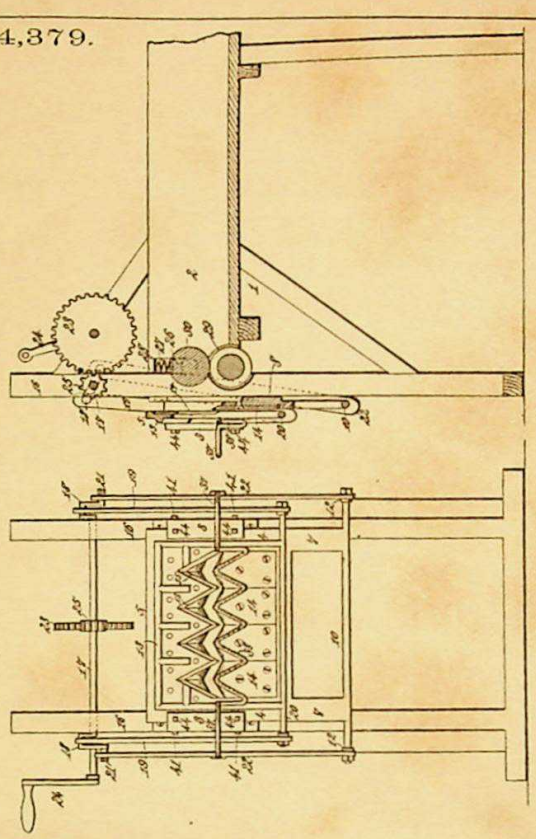


knife to sustain the straw as the knives sever the same, substantially as described.

2. The combination, in a straw-cutter, of a feed-box, two opposing knives, one movable toward the other and each comprising a series of cutting-dentations, with those of one knife alternating with and adapted to pass those of the other, a pair of feed-rolls, each having a series of annular depressions, and a bracing-support having a zigzagged portion corresponding substantially to the dentations and depressions of one knife and roller to sustain the straw as the knives sever the same, substantially as described.

3. The combination, in a straw-cutter, of the feed-box for the straw, a pair of knives movable toward each other and each composed of a metallic plate formed with a series of cutting-dentations, with those of one plate alternating with and adapted to pass those of the other, a pair of feed-rollers, each having a series of annular V-shaped bosses and corresponding depressions alternating with each other and conforming substantially to the dentations of the knives, and means for simultaneously moving the knives toward each other, substantially as described.

4. The combination, in a straw-cutter, of the feed-box, the knives movable toward each other and each composed of a metallic plate having a series of cutting-dentations, with those of one plate alternating with those of another, and a zigzagged bar corresponding substantially to the form of the dentated knives and movable toward one knife to support the protruding ends of the straw as the knives act thereupon, substantially as described.

5. In a straw-cutter, the combination, with vertically-reciprocating cutter-frames moving in parallel ways, of shear-setting wedges lying in an angular recess between the vertical arms of said frames and adjusted by set-screws to force said frames apart and setting-plates lying against the outer faces of two parallel arms of one of said frames and having adjusting-screws, substantially as described.

6. In a straw-cutter, the combination, with reciprocating cutters, each having a serrated or angular edge alternating with the serrations of the other cutter, of a pair of distributing feed-rolls having outlines resembling the outline of the cutting-edge and arranged to have a similar alternation, substantially as described.

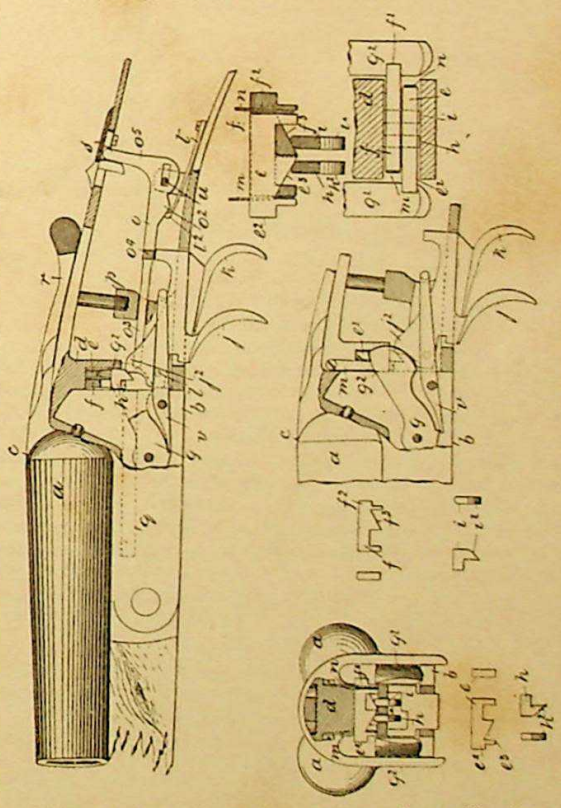
7. In a straw-cutter, the combination, with a pair of cutters, each having a serrated or angular edge alternating with the serrations or angles of the opposite edge of a brace-bar or board moving with the lower knife-frame, said bar being of a shape conforming to the cutting-edge of the lower cutter and arranged to lie beneath said edge, substantially as described.

8. In a straw-cutter, the combination, with a pair of cutters having serrated edges, the angles of one alternating with those of the other, of a brace-bar or board mounted on elastic supports carried by the lower cutter, the said bar conforming in shape to the angles of the cutting-edge, whereby it moves with and is drawn toward the lower cutter, beneath or opposite to the edge of which it lies as the knives operate, substantially as described.

9. In a straw-cutter, the combination, with a pair of cutters, each composed of a series of blades having two converging edges, of means, substantially as described, for imparting opposite reciprocation to both cutters, the cutting-edges of the one alternating with those of the other, a pair of distributing feed-rolls having bosses or corrugations which substantially correspond with the serrations of the upper and lower cutters, respectively, and a pawl-carrier reciprocated by a pitman actuated by one of the devices driving the cutters and having pawls meshing with ratchets on the ends of the feed-rolls, the pawl-carrier and pitman being either or both adjustable toward and from the point of support of the devices to which they are connected to shorten and lengthen the feed movement of the rolls, substantially as described.

10. In a straw-cutter, the combination, with the uprights of the cutter-box having parallel casings, of independent cutter-frames having their vertical arms moving in said casings and provided with ribs on their exterior faces and beveled upon their adjacent vertical angles, adjustable wedges lying in the angular space formed by said bevels, adjustable setting-plates bearing upon the outer faces of the vertical arms of one frame, and means for adjusting said wedges and setting-plates relatively to each other, substantially as described.

404,380. BREECH-LOADING FIRE-ARM. CHRISTOPHER G. BONEHILL, Belmont Row, Birmingham, County of Warwick, England. Filed June 29, 1888. Serial No. 278,519. (No model.) Patented in England May 29, 1888, No. 7,823.



Claim.—1. In a concealed-hammer gun, the combination, with the hammers thereof and the intercepting cross-bolts *e f*, arranged, respectively, side by side at the back of the breech-body part, of the pushers *h i*, formed with the inclines h^2 i^2, vertically movable below said bolts, and the triggers *j k*, upon which the pushers rest, substantially as described.

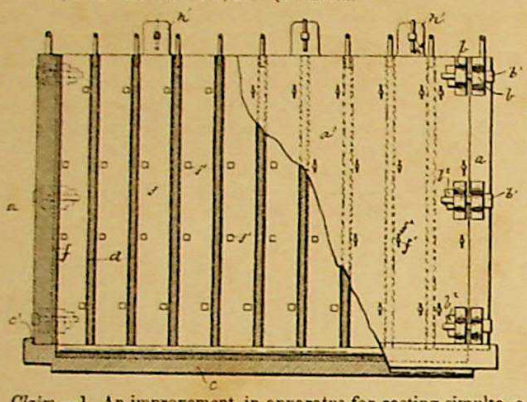
2. In a concealed-hammer gun, the combination, with the hammers and lock mechanism, of the transverse bolts *e f*, arranged side by side at the back of the breech-body and formed with the under side inclines e^3 f^3, engaged by vertically-movable pushers, and the springs *m n*, impinging against the ends of said bolts, substantially as set forth.

3. In a concealed-hammer gun, the combination, with the rear body part *d* and hammers *g g*, of intercepting-bolts *e f*, arranged at the back of the breech-body part, pushers *h i*, engaging with and located below said bolts and above the triggers, and the triggers $j j^2$ k k^2, as set forth.

4. In a concealed-hammer gun, the combination, with the hammers *g g*, the cross-bolts *e f*, arranged at the back of the body part

and having inclines e^3 f^3, of the pushers h i, located below said cross-bolts and having inclines h^2 i^2, and the triggers i k, with fore extensions j^2 k^2, bearing on said inclines, substantially as described.

404,381. INGOT-MOLD. EDWARD L. CLARK, Pittsburg, Pa. Filed Nov. 5, 1888. Serial No. 290,027. (No model.)



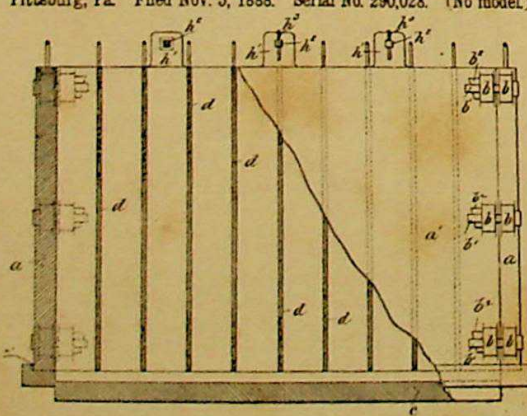
Claim.—1. An improvement in apparatus for casting simultaneously a series of two or more laterally-separate ingots by bottom casting, which consists in a mold subdivided into two or more compartments for separate ingots by upright removable partitions having openings under their bases, thereby establishing communication between the compartments, and forming at the base of the mold an open runner trough or gutter, substantially as and for the purposes described.

2. An improvement in apparatus for casting simultaneously a series of two or more laterally-separate ingots by bottom casting, which consists in a mold having a bottom piece formed with a concave or gutter-shaped surface, and upright partitions which divide said mold into two or more compartments for separate ingots, the bases of said partitions being elevated above the base of the concave or gutter-shaped surface of the bottom piece, thus establishing communication between the compartments and forming at the base of the mold an open runner trough or gutter, whereby the metal n the runners forms integral and reducible parts of the several ingots, substantially as and for the purposes described.

3. An improvement in apparatus for casting simultaneously a series of two or more laterally-separate individual ingots by bottom casting, which consists in a mold having separable ends and sides, partitions movably arranged in grooves in the sides and dividing the mold into a plurality of small molds for individual ingots, separate detachable linings for each of the small molds, and a base having recesses c', into which the sides and ends are detachably fitted, provided with a continuous longitudinal runner common to and communicating with all of the small molds, substantially as described.

4. A mold for casting simultaneously a series of two or more laterally-separate individual ingots, said mold having sides and ends, transverse partitions dividing the inclosed space into a series of smaller molds, a base having a unitary inlet or runner common to all the smaller molds, and an interior sectional lining of refractory material detachably secured in place in each of the smaller molds and co-operating with the partitions, substantially as described.

404,382. ART OF CASTING STEEL INGOTS. EDWARD L. CLARK, Pittsburg, Pa. Filed Nov. 5, 1888. Serial No. 290,028. (No model.)



Claim.—In the manufacture of steel, the improvement consisting in casting by bottom casting a series of two or more steel ingots separated laterally from each other and united laterally at their ends by thin webs or runners, which form integral and reducible parts of the several ingots, separating the ingots so formed by fracture of the webs between the adjacent ingots, and finally rolling each ingot and its integral fractured web or runner portion, thereby incorporating the runner portion with the ingot, substantially as and for the purposes described.

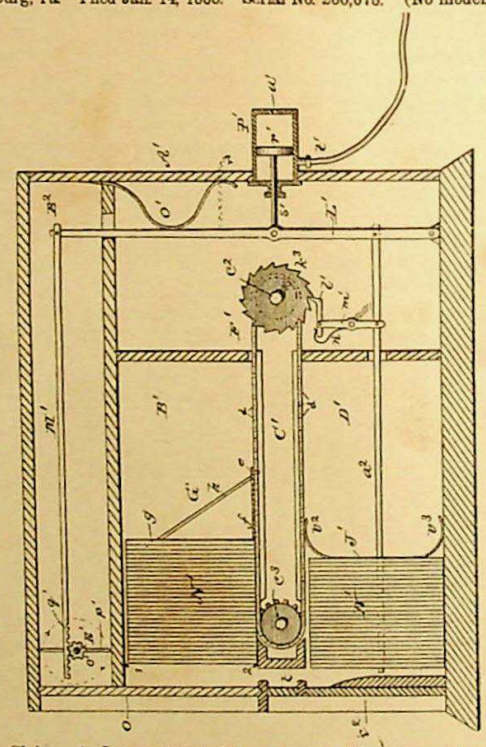
404,383. BALE-TIE BUCKLE. EDWARD L. CLARK, Pittsburg, Pa. Filed Jan. 23, 1889. Serial No. 297,331. (No model.)

Claim.—1. A bale-tie buckle having a slot for receiving the bale-band, lips bent over the edges of the slot to form bearing-surfaces for the band, and supporting-surfaces which hold out and support the lips, substantially as and for the purposes described.

2. A bale-tie buckle consisting of slotted superposed leaves and a reflexed lip forming the bearing-surface of the bale-band in the slot, substantially as and for the purposes described.

3. A bale-tie buckle consisting of two superposed leaves, each of which is slotted and is provided with a lip, the lip of each leaf being bent over the edge of the slot of the other leaf and forming a bearing-surface for the band, substantially as and for the purposes described.

404,384. STATION-INDICATOR. VICTOR L. CUNNYNGHAM, Pittsburg, Pa. Filed Jan. 14, 1888. Serial No. 260,678. (No model.)



Claim.—1. In a station-indicator, the combination, with a casing provided with a compartment for containing cards bearing the names of the streets or stations and having an aperture in one end of its bottom, of an endless carrier working in the bottom of the compartment for moving the cards over the aperture therein, and means for operating the endless carrier, substantially as described.

2. In a station-indicator, the combination, with a casing provided with compartments communicating with each other, of a series of cards bearing the names of the streets or stations and arranged in the upper compartment, an endless belt, a projection or bracket carried by the belt and engaging the cards, and means, substantially as described, for imparting motion to the endless belt, substantially as herein shown and described.

3. In a station-indicator, the combination, with a casing provided with compartments communicating with each other, of a series of cards bearing the names of the streets or stations and arranged in the upper compartment, an endless belt provided with a bracket engaging the cards, a ratchet-wheel on the shafts of one of the rollers of the endless belt, a spring-actuated pawl engaging the ratchet-wheel, a pivoted lever, a connection between said lever and pawl, and means for operating the lever, substantially as herein shown and described.

4. In a station-indicator, the combination of a casing provided with compartments communicating with each other, an endless belt working in the bottom of the upper compartment and provided with a bracket, a ratchet-wheel on the shaft of one of the rollers of the endless belt, a pawl engaging the ratchet-wheel, a pivoted lever, a connection between the said lever and pawl, and an air or steam cylinder having its piston-rod connected to the said lever, substantially as specified.

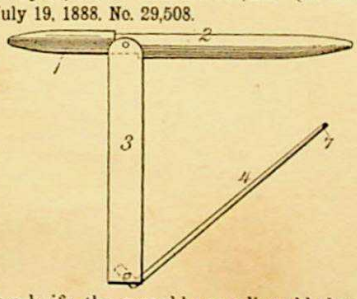
5. In a station-indicator, the combination, with a casing provided with a compartment for containing cards bearing the names of streets or stations and having an aperture in one end of its bottom, a carrier for moving the cards over the aperture in the bottom of the said compartment, and means for operating the carrier, of a rotating plate arranged above the compartment and operated from the card-moving mechanism, substantially as herein shown and described.

6. In a station-indicator, the combination, with a casing provided with compartments communicating with each other, of an endless belt for transferring the cards carrying the names of the streets or stations from one compartment to the other, card-holding arms in the compartment into which the cards drop after being displaced, and means for operating the said belt and arms, substantially as herein shown and described.

7. In a station-indicator, the combination, with a casing divided into compartments communicating with each other, of an endless belt for transferring the cards carrying the names of the streets or stations from one compartment to the other, a ratchet-wheel on one of the rollers of the endless belt, a lever pivoted in the casing, card-holding arms connected to the lever, a second lever pivoted in the casing and to the first-named lever, a spring-pawl carried by the second lever and engaging the ratchet-wheel, and means for operating the first-named lever, substantially as herein shown and described.

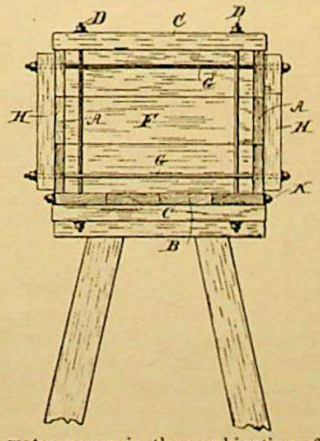
8. In a station-indicator, the combination, with a casing divided into compartments communicating with each other and an endless belt for transferring the cards carrying the names of the streets or stations from one compartment to the other, of a lever pivoted in the casing, card-holding arms in the lower compartment and connected to said lever, a follower in the said lower compartment, a second lever pivoted in the casing and connected to the first-named lever, a spring-pressed pawl on the upper end of the second lever, a ratchet-wheel on one of the rollers of the endless belt, a shaft in the top compartment provided with a plate and a pinion, and a rack engaging the pinion and connected with the first-named lever, substantially as herein shown and described.

404,385. CUTLERY. RICHARD DAINE, Halifax, Nova Scotia, Canada. Filed July 19, 1888. Serial No. 280,452. (No model.) Patented in Canada July 19, 1888. No. 29,508.



Claim.—In a knife, the movable or adjustable back fitted so as to admit of its being opened to allow either end of the double-ended blade aforesaid to pass out of the handle and being then closed to retain the blade in position.

404,386. WATER-RESERVOIR. HERMAN DAUE, Woodland, Wis. Filed June 28, 1888. Serial No. 278,458. (No model.)

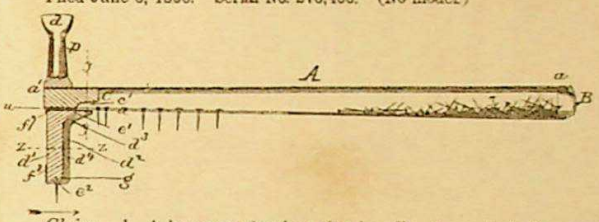


Claim.—In a water-reservoir, the combination of the bottom B, formed of separate pieces of plank, bottom-retaining bolts K, passing horizontally through apertures formed in the body of said plank, sides A A and side-retaining bolts J, passing through apertures formed in the plank composing said sides, vertical cross-pieces H, secured to the exterior surface of the respective sides of said tank by the retaining cross-bolts G, retaining cross-bolts G, horizontal cross-pieces C C, respectively located one above and the other beneath the respective sides of the tank and retaining-bolts D, said retaining-bolts D being adapted to draw said side planks A in close contact with each other and the bottom B, and said bolts G G being adapted to retain said side planks in contact with the respective ends of the end planks of said tank, all substantially as and for the purpose specified.

404,387. CLEANSING AND POLISHING COMPOUND. JOSEPH H. DESPAIN, Kansas City, Mo., assignor of one-half to Dwight O. Wallace, same place. Filed Jan. 21, 1889. Serial No. 297,047. (Specimens.)

Claim.—The herein-described cleansing and polishing compound, composed of a hydrocarbon, acetic acid, hydrochloric acid, trichloride of antimony, alcohol, and dragon's blood, (*Sanguis draconis.*) in the proportions substantially as specified.

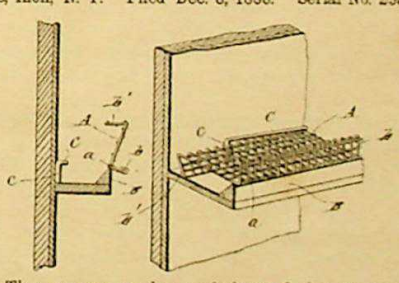
404,388. HAMMER. AMBROSE L. DE VOL, Binghamton, N. Y. Filed June 8, 1888. Serial No. 276,466. (No model.)



Claim.—1. A hammer having the handle A made hollow and provided with a slot *a* underneath, the head D, having the driving end *d* and the peen end *d'*, the latter having a groove d^2 in its rear side connecting with the slot *a*, said groove being covered by a slotted guide-plate which extends around the extremity of the peen end of the hammer, as set forth.

2. The combination of a hollow handle having the guide-slot *a*, the head D, having the groove d^2, and the guide-plate F, having the hole f^3, the slot f^2, and the slot f^4, as set forth.

404,389. CRAYON-RACK FOR BLACKBOARDS. ADELBERT J. DOUGLASS, Ilion, N. Y. Filed Dec. 8, 1888. Serial No. 293,039. (No model.)



Claim.—The crayon-rack consisting of the crayon or chalk screen, the dust-trough, and the springs, the screen comprising a series of transverse wires bent down to form a vertical leg for the support of the rear edge of the tray and upward to form a guard at the front edge of the tray, said springs being formed with vertical end portions secured in the bottom of the trough, and with a horizontal portion bowed to project outward to secure the screen in place, substantially as shown and described, and for the purpose set forth.

404,390. SUBMARINE SEARCH-LIGHT. ANDREW L. DUTTON, Racine, Wis., assignor to himself and Walter B. Dutton, same place, and Marshall M. Dutton, Chicago, Ill. Filed Nov. 16, 1888. Serial No. 291,037. (No model.)

Claim.—1. The combination, with the shell or case B, of an observation-tube A, attached thereto, a lamp contained within said case for illuminating the object, lenses or reflectors, and a camera contained within said case or shell adjacent to said observation-tube, substantially as specified.

2. The combination, with the tube A, of shell or case B, having light-chamber B' and reflector-chamber B^2, electric lamp D, lens or window E, lens or window G, and two reflectors within said chamber B^2, one opposite said lens G and one opposite said observation-tube A, substantially as specified.

3. The combination, with the tube A, of shell or case B, having light-chamber B' and reflector-chamber B^2, electric lamp D, lens or window E, lens or window G, and two reflectors within said chamber B^2, one opposite said lens G and one opposite said observation-tube A, and camera K, contained within said case or shell adjacent to said observation-tubes, substantially as specified.

4. The combination, with the tube A, of shell or case B, having light-chamber B' and reflector-chamber B^2, electric lamp D, lens or window E, lens or window G, and two reflectors within said chamber B^2, one opposite said lens G and one opposite said observation-tube A, camera K, and an electric circuit and magnet for operating the shutter of said camera, substantially as specified.

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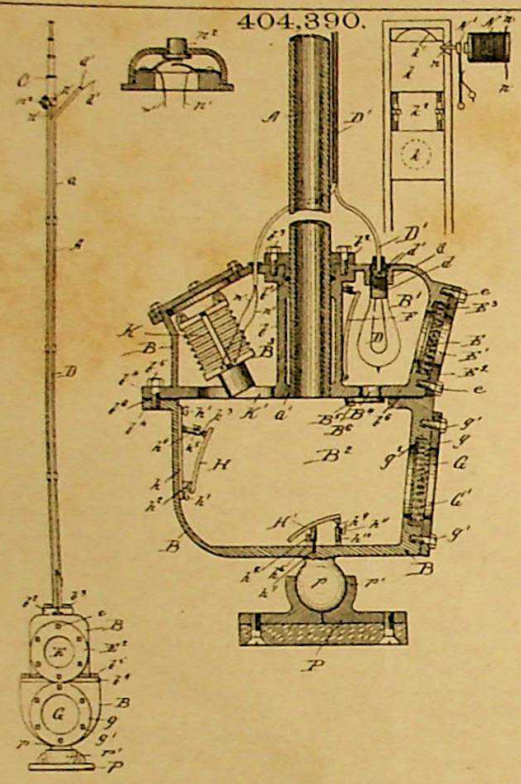


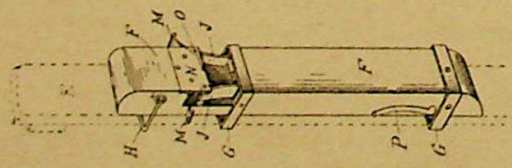
5. The combination, with tube A, of shell or case B, having light-chamber B' and reflector-chamber B², electric lamp D, lens or window E, lens or window G, and two reflectors within said chamber B², one opposite said lens G and one opposite said observation-tube A, said reflectors being hung adjustably within said chamber, substantially as specified.

6. The combination, with shell or case B, of an observation-tube A, attached thereto, a lamp contained within said case for illuminating the object, and lenses or reflectors, said case being provided with a base P, connected thereto by a ball-and-socket joint, substantially as specified.

7. The combination of observation-tube A, case B, having windows or lenses E G, lamp D, and base-plate P, said shell B, with its tube A, being rotatable on said base-plate, substantially as specified.

8. The combination, with the tube A, of shell or case B, having light-chamber B' and reflector-chamber B², electric lamp D, lens or window E, lens or window G, and two reflectors within said chamber B², one opposite said lens G and one opposite said observation-tube A, and a telescope at the upper end of said observation-tube, substantially as specified.

404,391. GATE-LATCH. PHILLIP DYER, Mooretown, Ontario, Canada, assignor of one-half to William Abernethy, same place. Filed Nov. 1, 1888. Serial No. 289,779. (No model.)

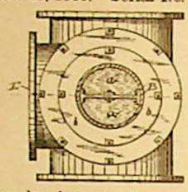


Claim.—1. The combination, with the latch-post and the vertically-adjustable gate, of a guide-rail secured to said post, a sliding block adjustable on said rail, gravity-latches, and a pivoted binder on said block engaging said rail, substantially as and for the purpose specified.

2. The combination, with the latch-post and a guide-rail secured thereto, of a vertically-adjustable gate, a recessed sliding block carrying the keepers and adjustably secured to said guide-rail by the straps G, and by the binder H, and the notched plate N, the parts being arranged to operate substantially as and for the purpose described.

3. In combination with a vertically-adjustable farm-gate provided with the latch-pin L, the guide-rail E, secured to the latch-post, the recessed block F, having the notch O, slidingly secured upon the guide-rail E, the bail or binder H, the gravity-latches J, adapted to swing to the inside, the stops K, and the forked bail P, the parts being constructed and arranged to operate substantially in the manner and for the purposes herein set forth.

404,392. VALVE. FREDERIC EGNER and JOHN W. HARRISON, St. Louis, Mo. Filed Feb. 23, 1889. Serial No. 300,825. (No model.)



Claim.—The sectional valve-case A, provided with stuffing-box c and inlet and outlet openings, and with a refractory or fire-brick lining having a valve-seat therein, in combination with the water-vessel B, fitting and extending up through the stuffing-box, with its mouth or upper end projecting outside of the valve-case and open to the atmosphere, all constructed and arranged as hereinbefore shown and described.

404,393. WATER-CLOSET. ALBERT ELMENDORF, New London, Conn., assignor of one-half to Stephen A. Gardner and Charles Prentis, both of same place. Filed Mar. 6, 1889. Serial No. 302,107. (No model.)

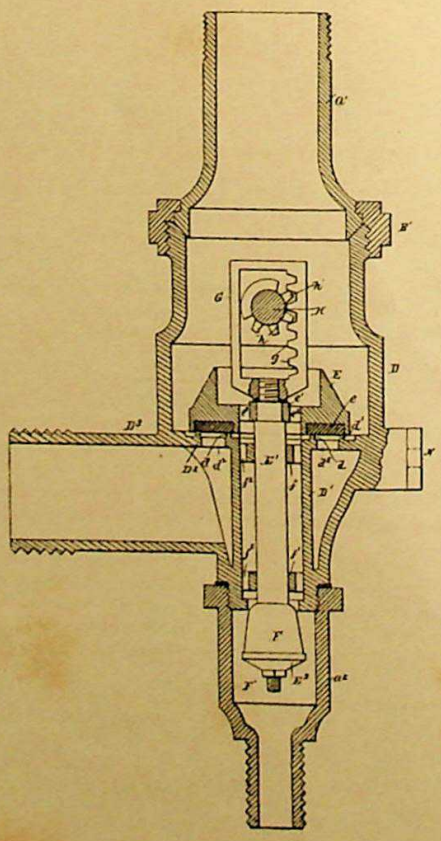
Claim.—1. The combination, with the bowl and its flushing stand-pipe, of the ventilating-extension of said pipe, the ventilating-pipe connecting said bowl and ventilating-extension, the flushing-valve, and the valve in the ventilating-extension connected to the flushing-valve to be operated simultaneously therewith, substantially as described.

2. The combination, with the stand-pipe and bowl and the flushing-valve connecting said pipe and bowl, of the ventilating-extension of said stand-pipe provided with a valve connected to said flushing-valve, and a ventilating-pipe connecting said bowl with the ventilating-extension of said stand-pipe, substantially as described.

3. The combination, with the bowl and stand-pipe, of the interposed valve-chamber having the perforated diaphragm D² and inner tube D', and the connected valves E and F, arranged and operating substantially as described.

4. The combination, with the bowl A and its flushing stand-pipe B, of the interposed valve-chamber or section of the stand-pipe having the perforated diaphragm and the lateral flushing-pipe D³ below said diaphragm, the lift-valve E, the water-supply valve F, connected to said lift-valve to operate as described, and the rock-shaft connected to said valves for operating them, substantially as described.

5. The combination, with the bowl in a flushing arrangement for water-closets, of the flushing-valve E, the ventilating extension or pipe C C', provided with a valve K, the ventilating-pipe b', connecting the bowl with the ventilating-extension pipe, and connections, sub-



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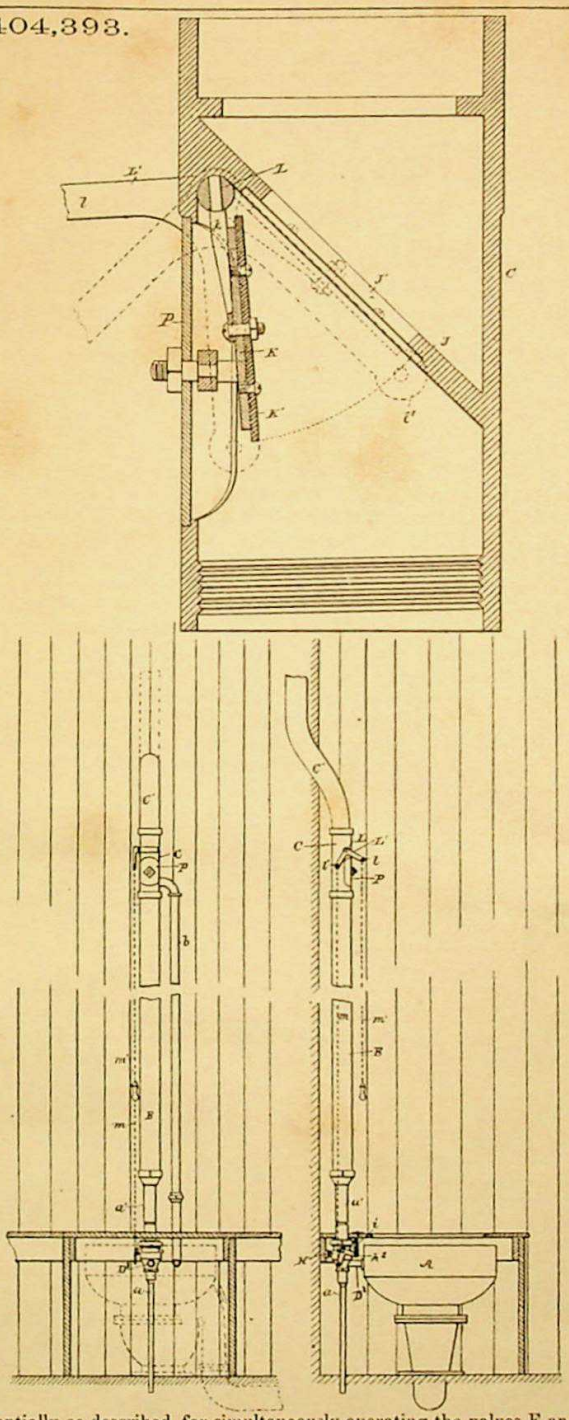

stantially as described, for simultaneously operating the valves E and K, for the purpose specified.

404,394. MECHANISM FOR CUSHIONING TRAVERSING BEDS OF RECIPROCATING MACHINERY. HENRY P. FEISTER, Philadelphia, Pa. Filed July 26, 1888. Serial No. 281,099. (No model.)

Claim.—1. The combination, in a machine, of the reciprocating or traversing bed with a piston connected to and moved with said bed, a cylinder in which said piston reciprocates pivoted or hinged at one end to the frame or foundation plate of the machine.

2. The combination, in a machine, of the reciprocating or traversing bed with a piston connected to and moved with said bed, a cylinder having its end closed and provided with a relief-valve, and in which cylinder said piston reciprocates, and in which the said cylinder is pivoted or hinged at one end to the frame or foundation of the machine.

3. The combination, in a machine, of the reciprocating or traversing bed with a piston connected to and moved with said bed, a cylinder in which said piston reciprocates pivoted or hinged at one end to the frame of the machine, and springs to counterbalance and cause said cylinder to normally assume an upright or substantially vertical position.

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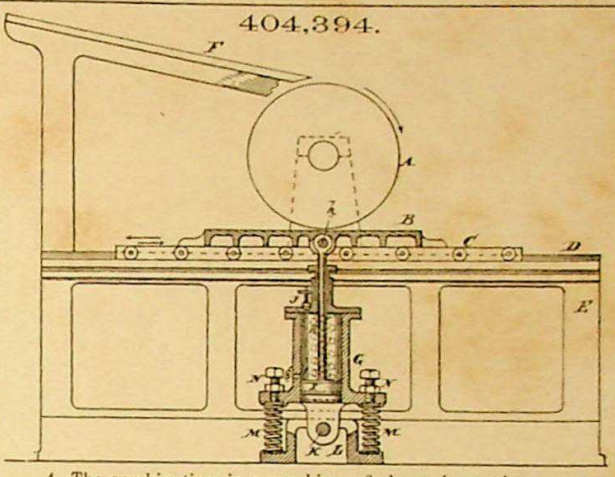


4. The combination, in a machine, of the reciprocating or traversing bed with a piston connected to and moved with said bed, a cylinder in which said piston reciprocates pivoted or hinged at one end to the frame or foundation of the machine, springs to cause said cylinder to normally assume an upright or substantially vertical position, and means to adjust the tension of said springs.

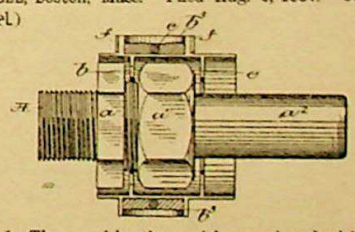
5. The combination of the reciprocating or traversing bed, a piston hinged to it on a transverse axis, and a cylinder closed at one end and hinged at or near its other end also on a transverse axis, and in which the piston reciprocates, the said cylinder having an aperture at or near one end for the admission of air above the piston when fully lowered.

6. The combination of the reciprocating or traversing bed, a piston hinged to it on a transverse axis, a cylinder closed at one end and hinged at or near its other end also on a transverse axis in which the piston reciprocates, the said cylinder having an aperture at or near one end for the admission of air above the piston when fully lowered, and a pressure relief-valve at or near its closed end.

7. A reciprocating or traversing bed, combined with a pivoted cylinder and piston connected to and operated by the movements of the bed to compress air in the cylinder.

8. The combination of a main frame, a reciprocating traversing bed, and a spring continually acting on said traversing bed and always opposing its movement and tending to bring it to a central and fixed position.

404,395. SEALING DEVICE FOR WATER-METERS. GEORGE S. FOLLANSBEE, Boston, Mass. Filed Aug. 6, 1887. Serial No. 246,284. (No model.)



Claim.—1. The combination, with a seal or locking device consisting of two parts b' b^2, having flanges b^3 b^4 and b e, the flanges b having holes c, of a fastening device or wire adapted to be inserted through said holes to unite the said parts, substantially as described.

2. The combination, with a seal or locking device consisting of two parts b' b^2, having flanges b^3 b^4 and b e, the flanges b' b^2 having holes c, of a wire inserted through the said holes, and a key to turn or bend said wire, substantially as and for the purpose specified.

3. A seal or locking device for pipe-couplings, consisting of two parts b' b^2, provided with flanges b^3 b^4, having lips f and forming a cup or socket b^5, and a flange b, provided with a rabbet to prevent movement of the parts b' b^2 independent of each other in one direction, substantially as described.

404,396. CAMERA-STAND. WILLARD H. FULLER, Passaic, N. J., assignor to The Scovill Manufacturing Company, New York, N. Y. Filed Nov. 17, 1888. Serial No. 291,139. (No model.)

Claim.—1. A camera-stand consisting of a base-frame provided with wheels or casters and a vertically-adjustable bed and camera-support, the said support oscillating on its center, substantially as specified.

2. In a camera-stand having a base-frame and a vertically-adjustable bed and centrally-oscillating camera-support, the combination, with the base-frame, of wheels or casters secured to the sides of the base-frame so as to give the latter an extended base, substantially as specified.

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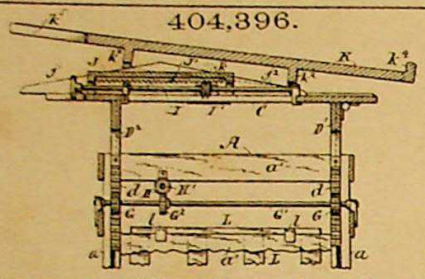


3. In a camera-stand, the combination of a base-frame, two vertically-adjustable frames combined therewith, springs bearing on said frames, and a bed hinged to one and detachably engaged with the other, substantially as specified.

4. In a camera-stand, the combination of a base-frame, a bed adjustably supported by the base-frame and having a central oscillation, a shaft for effecting the adjustment of the said bed, and a hand-wheel upon said shaft, substantially as specified.

5. In a camera-stand, the combination of a base-frame, two upright frames having a sliding connection therewith, racks upon said upright frames, a rotary shaft, gear-wheels upon said shaft engaging with said racks, a worm-wheel upon said shaft, another rotary shaft, and a worm upon the last-mentioned rotary shaft engaging with the said worm-wheel, substantially as specified.

6. In a camera-stand, a bed and a camera-support, both notched at one end, said notches being one above the other, and the arms of the notch in the support forming an extended bearing for the camera, substantially as specified.

7. In a camera-stand, the combination of a bed, a camera-support pivotally connected between its ends to said bed, a slide arranged between said bed and camera-support, and inclines carried by said slide operating to tilt the camera-support, substantially as specified.

8. In a camera-stand, the combination of a bed notched at one end, a camera-support notched at the corresponding end and pivotally connected between its ends to said bed, a slide arranged between said bed and camera-support, and inclines carried by said slide and arranged laterally beyond the notches of the bed and camera-support and operating to tilt the camera, substantially as specified.

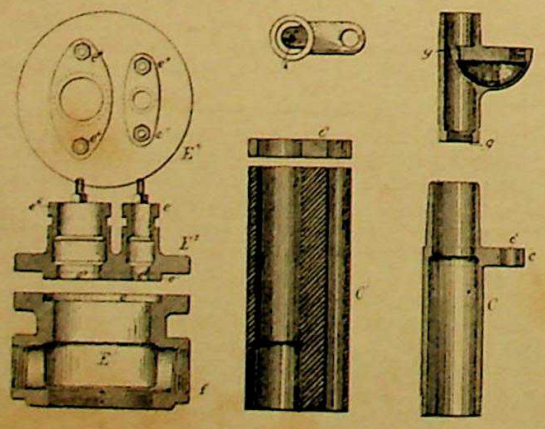
9. In a camera-stand, the combination of a bed, a camera-support pivotally connected between its ends to the bed, a slide between the bed and camera-support, inclines carried by the slide, a rack upon the slide, and a rotary shaft supported by the bed in a position parallel with the rack and operating to transmit longitudinal motion to the slide, substantially as specified.

10. In a camera-stand, the combination of a bed notched at one end, a camera-support notched at the corresponding end and pivotally connected between its ends to the bed, a slide intermediate of the bed and camera-support, inclines carried by the slide arranged laterally beyond the notches of the bed and camera-support and serving to tilt the camera-support, and a rotary shaft serving to impart longitudinal motion to the slide and having its end which is to be actuated by the operator located close to the inner ends of the notches in the bed and camera-support, substantially as specified.

404,397. DEVICE FOR EJECTING OIL FROM OIL-WELLS. WILLIAM GEISER, Salina, Pa. Filed Nov. 1, 1888. Serial No. 289,709. (No model.)

Claim.—1. The combination, substantially as set forth, of the oil-tubing A A′ A² with the pipe F, located outside of the oil-tubing, the ejector B, and check-valve J.

2. The combination, substantially as set forth, of a pipe F, check-valve J, ejector B, check-valve *h*, oil-tubing A A′ A², packer C C′ C², and casing-head E′ E².



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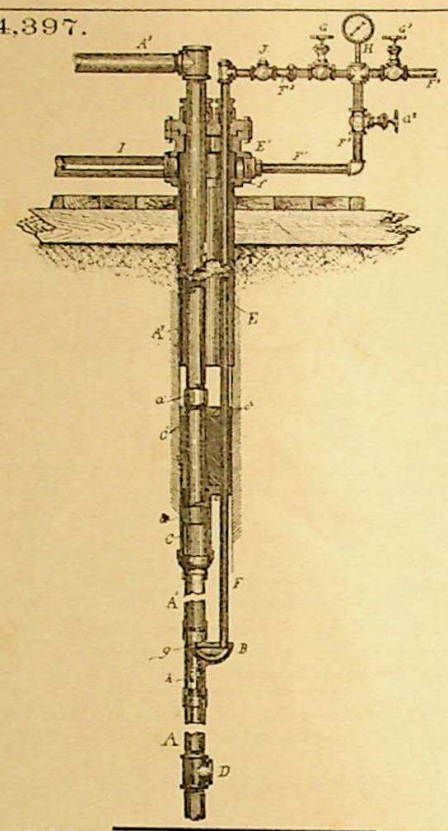
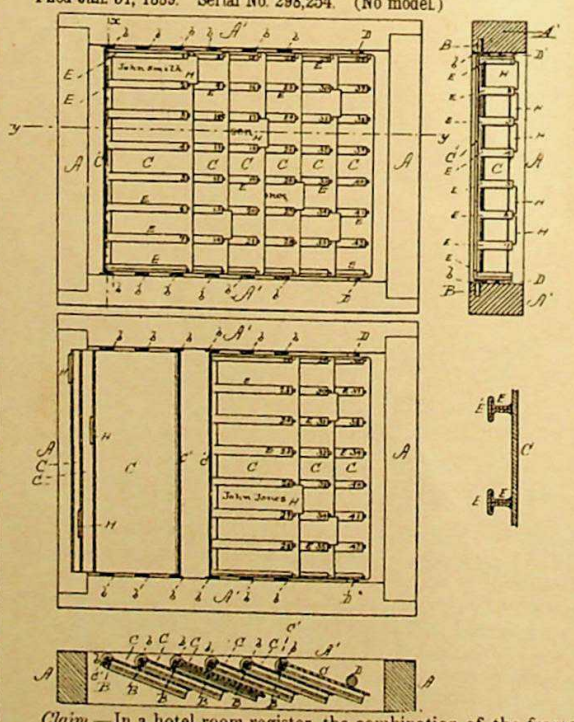


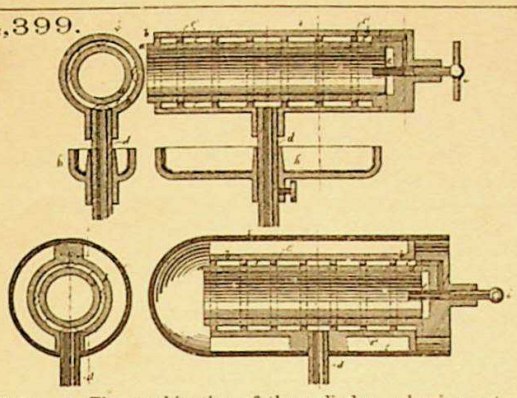
404,398. HOTEL ROOM-REGISTER. CHARLES H. GREENLEAF, Boston, Mass., assignor of one-half to William A. Tracy, Nashua, N. H. Filed Jan. 31, 1889. Serial No. 298,254. (No model.)



Claim.—In a hotel room-register, the combination of the frame A, the series of parallel rods or shafts B, whose ends are held in said frame, the series of leaves C, turning or swinging on said rods or shafts, each leaf being integral and swinging bodily and provided with recesses or spaces separated by partitions adapted for the easy insertion, withdrawal, and holding of cards or slips, on which may be written the names, &c., of guests, said partitions being provided near their outer ends with characters indicating the different rooms, and a stop piece or rod D, substantially as and for the purpose set forth.

404,399. APPARATUS FOR BURNING PETROLEUM OR SIMILAR SUBSTANCES. LOUIS P. GUIGNARD, Fluntern, near Zurich, and JAKOB SCHWEIZER, Unterstrass, near Zurich, Switzerland. Filed Aug. 30, 1888. Serial No. 284,174. (No model.) Patented in France May 4, 1888, No. 190,410, and in England July 24, 1888, No. 10,684.

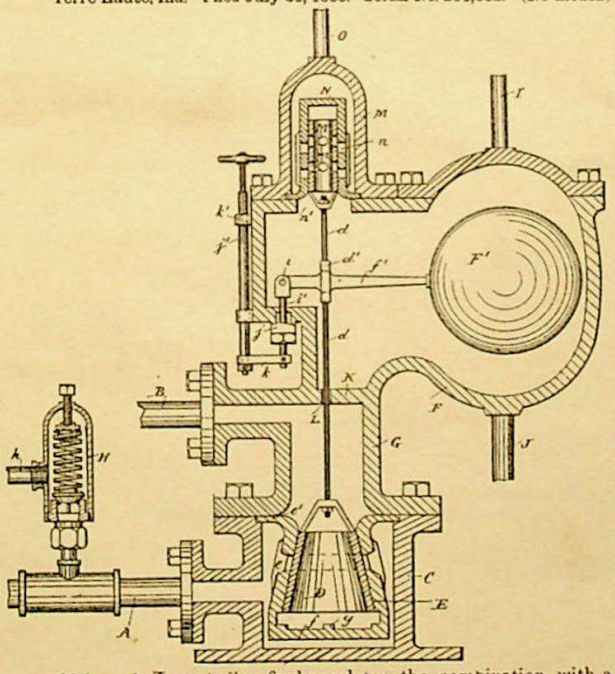
404,399.



Claim.—1. The combination of the cylinder *a*, having external annular flanges and provided with recesses *c'* in each of said flanges, jacket *b* resting on said flanges, forming chambers or spaces *c* between the cylinder and jacket, the chambers or spaces *c* communicating through the recesses *c'* with each other and with the feed-tube *d*, leading to one of the chambers or spaces *c*, and the jet *e*, leading from one of the chambers or spaces *c* to the interior of the cylinder *a*, substantially as described.

2. The combination of the cylinder *a* and jacket *b* around said cylinder, forming the chamber or space *c* between said cylinder and jacket, with the outer apertured jacket *f*, feed-tube *d*, leading to the chamber or space *c*, and jet *e*, leading from the chamber or space *c* to the interior of the cylinder *a*, substantially as described.

404,400. BOILER FEED-REGULATOR. WINFIELD O. GUNCKEL, Terre Haute, Ind. Filed July 26, 1888. Serial No. 281,082. (No model.)



Claim.—1. In a boiler feed-regulator, the combination, with a conical regulating-valve working in a seat provided with orifices for the passage of water, of an outer casing for said valve and its seat, a float operatively connected to said conical valve, a float-casing connected to said valve-casing, inlet and delivery pipes upon opposite sides of the regulating-valve, and a safety-valve secured upon the inlet-pipe, substantially as and for the purpose set forth.

2. In a boiler feed-regulator, the combination, with an open-ended conical regulating-valve, of a valve-seat provided with lateral orifices for the passage of water, and projections on its bottom for the said valve to rest on, of an outer casing for the said valve and its seat, a float operatively connected to said conical valve, a float-casing connected to the said valve-casing, inlet and delivery pipes upon opposite sides of the regulating-valve, and a safety-valve secured upon the inlet-pipe, substantially as and for the purpose set forth.

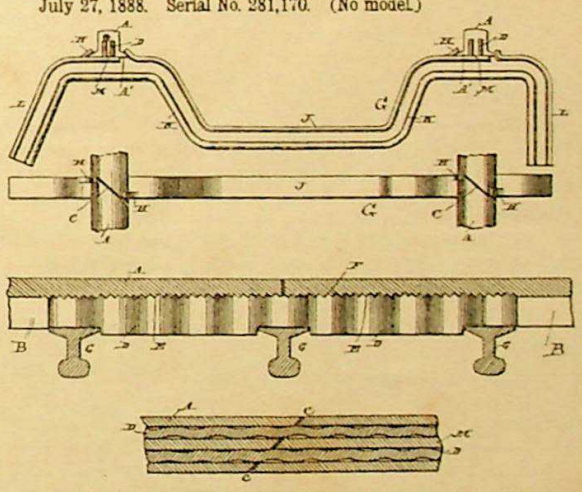
3. The combination, with the water-regulating valve of a boiler-feeder, of the float provided with a lever and operatively connected to said valve, a fulcrum-stem for the said lever passing through the float-casing, a connecting-piece secured to the end of said stem, and a revoluble screwed spindle engaging with a stationary screw-threaded projection and journaled in the connecting-piece for adjusting the fulcrum of the float, substantially as set forth.

4. In a boiler feed-regulator, the combination, with a water-regulating valve provided with a stem and a float operatively connected to the said stem, of an outer casing for the said valve, water inlet and delivery pipes upon opposite sides of the valve, a casing for the float connected to the steam and water spaces of the boiler, and a partition provided with a hole for the valve-stem and arranged between the water-space under the float and the water-space above the regulating-valve, whereby the float may rest in still water, substantially as set forth.

5. In a boiler feed-regulator, the combination, with a water-regulating valve provided with inlet and outlet pipes, and a safety-valve upon the said inlet-pipe, of a float provided with a pivoted lever and working in a casing above the said water-valve, a balanced steam-supply valve for the pump working in a cylinder on top of the float-casing, both valve and cylinder being provided with orifices for regulating the passage of steam from the float-casing, and a stem connecting the said steam and water valves with the float-lever, substantially as and for the purpose set forth.

6. In a boiler feed-regulator, the combination, with a water-regulating valve provided with inlet and outlet pipes, and a safety-valve on the said inlet-pipe, of a float provided with a pivoted lever, a steam-supply valve for the pump, a stem connecting the said steam and water valves with the float-lever, and casings inclosing the said water-valve and float and having their internal spaces separated by a partition provided with a small hole for the passage of the valve-stem, whereby the float may work in still water and the steam-valve receive dry steam direct from the upper part of the float-casing, substantially as set forth.

404,401. RAILWAY-TRACK. JACOB HAISH, De Kalb, Ill. Filed July 27, 1888. Serial No. 281,170. (No model.)



Claim.—1. The combination of the rail A, provided with recesses B B, and corrugations F, and bars D, provided with notches E, substantially as shown, and for the purpose described.

2. The combination of the tie G, provided with lugs H, formed in diagonal parallel lines thereon, and the rail A, provided with diagonally-formed ends C, substantially as shown, and for the purpose described.

3. The combination of the tie G, provided with lugs H, and rails A, provided with flanges A', and diagonally-formed ends C, substantially as shown, and for the purpose described.

4. The combination of the tie G, provided with lugs H, and central depression J, rails A, provided with recesses B, and central supporting-wall M, and flanges A', and the bars D, substantially as shown, and for the purpose described.

5. The combination of the tie G, provided with central depression J, and lugs H, the rails A, provided with diagonal ends C, wall M, and recesses B, provided with corrugations F therein, and the bars D, provided with notches E therein, substantially as shown, and for the purpose described.

404,402. CART. THOMAS HARDY, Toronto, Ontario, Canada. Filed Sept. 12, 1888. Serial No. 285,193. (No model.)

Claim.—1. The combination, with the body A, of the ledges B, secured to the top thereof, the bars C, secured to the sides of said body and extended across the tops of said ledges and across the bottom of the body, and the braces D, all substantially as shown and described, and for the purpose specified.

2. The combination, with the axle having a crank formed in it, as shown, the body, and the ledges secured to the top of said body, of the springs secured at their ends to the under side of said ledges, the T-pieces on the axle, the plate between the T-pieces and the bottom of the spring, and the clips J, passed around said spring and

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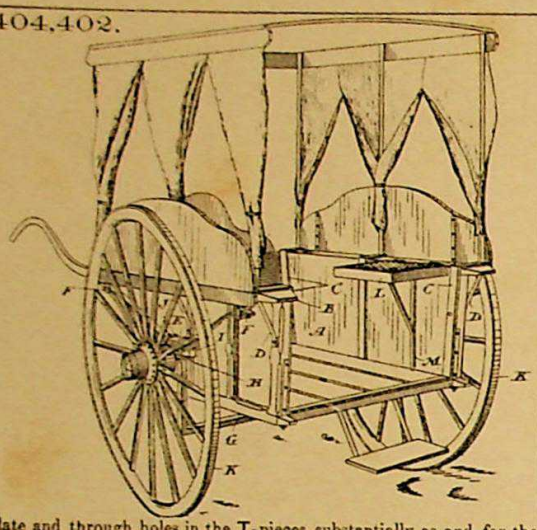
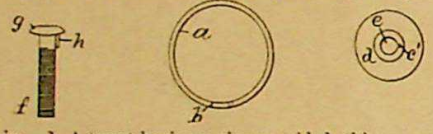


plate and through holes in the T-pieces, substantially as and for the purposes specified.

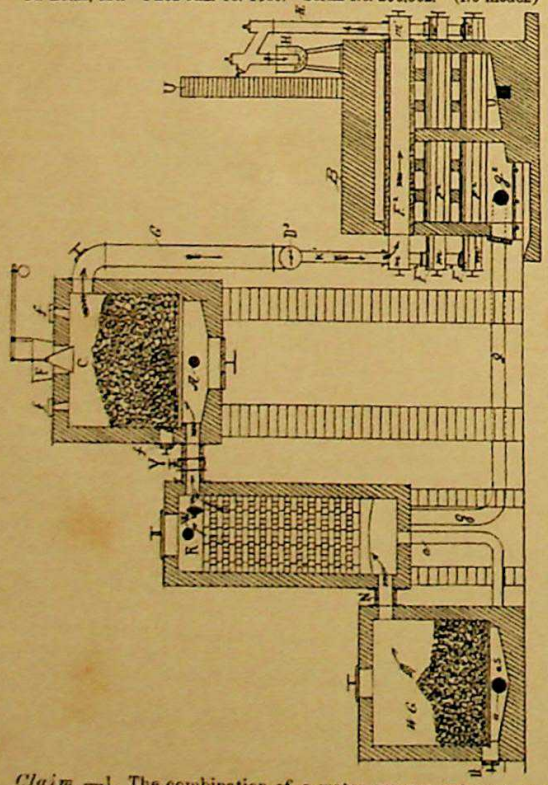
404,403. TERRET WITH SEPARABLE SHANK. EMERY E. HARDY, Newark, N. J. Filed Oct. 12, 1888. Serial No. 287,928. (No model.)



Claim.—1. A terret having a ring provided with an aperture in one side, a collar formed in a separate piece, and a through-bolt inserted through the ring and collar, the several parts of the terret being detachable from one another, substantially as shown and described.

2. A terret having a ring and collar united by a through-bolt provided with a feather to hold the bolt from turning in the side of the ring.

404,404. APPARATUS FOR THE MANUFACTURE OF FUEL AND ILLUMINATING GAS. JOHN W. HARRISON and FREDERIC EGNER, St. Louis, Mo. Filed Jan. 16, 1889. Serial No. 296,562. (No model.)



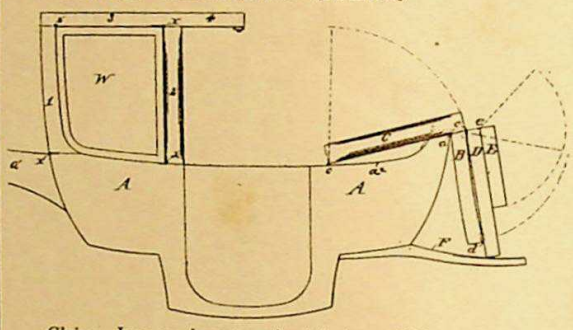
Claim.—1. The combination of a water-gas generator or producer, a superheater which receives the gases from the generator, a coal-distilling chamber which receives the gases from the superheater, and a bench of retorts to which the gases and vapors from the coal-distilling chamber directly pass, the whole connected and adapted to operate substantially in the manner hereinbefore set forth.

2. The combination, with the water-gas generators or sets of generators W G W' G', the superheaters R R', one for each water-gas generator or set of generators, and the coal-distilling chamber C, common to said superheaters, these elements being constructed, connected together, and adapted to jointly operate substantially in the manner and for the purposes hereinbefore set forth.

3. In combination with the retort-bench and the coal-distilling chamber, the regulator or superheater provided with three valve-controlled outlets, the one leading to the atmosphere, the next to the coal-distilling chamber, and the third to the combustion chamber or furnace of the retort-bench, substantially as and for the purposes hereinbefore set forth.

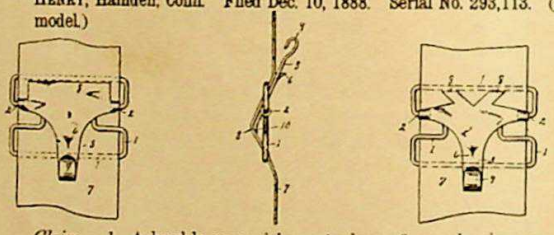
4. In combination with the superheaters and retort-bench, the intermediate coal-distilling chamber, connected on the one hand with the superheaters and on the other hand with the retorts, and provided with the air and steam inspirator A, substantially as and for the purposes hereinbefore set forth.

404,405. CARRIAGE. MICHAEL HAUGHEY, St. Louis, Mo. Filed Oct. 31, 1888. Serial No. 289,663. (No model.)



Claim.—In a carriage-top, the jointing and hinging of the back B at a point higher than the front center pillar C, so that the top when open will fold in a vertical position outside of and parallel to the rear panel, all substantially as shown and described, and for the purposes set forth.

404,406. BUCKLE. ROBERT G. HENRY, Waterbury, and RENE L. HENRY, Hamden, Conn. Filed Dec. 10, 1888. Serial No. 293,113. (No model.)



Claim.—1. A buckle comprising a body or frame having upper and lower cross-pieces and bearings between said cross-pieces, a tongue pivotally attached to said bearings, and provided at its lower end with a hook and with a backwardly-extending prong 6 below said bearings, said tongue having its upper end extended above its pivotal bearings to form a clamping part 8, arranged to engage the web and clamp the same against the upper cross-piece of the said body or frame.

2. A buckle comprising a body having bearings and a tongue turning thereon and having a clamping-surface 8, a prong 6, and a prong 10 to engage the web, and a hook to engage an attaching-strap.

404,407. STOP MECHANISM FOR LOOMS. EDUARD HERZIG, West Hoboken, assignor to Rand H. Simon, Union, N. J. Filed Sept. 8, 1888. Serial No. 284,903. (No model.)

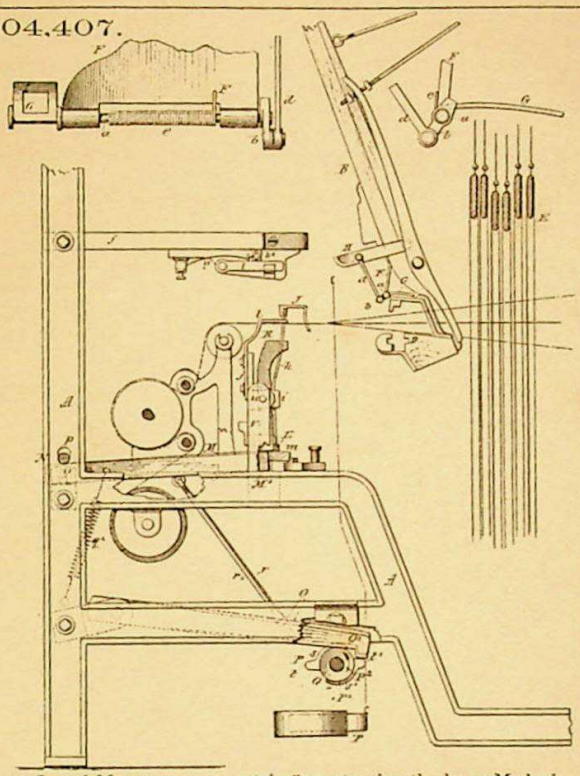
Claim.—1. In a loom, the batten B and the movable fly or fork G carried by said batten, and means, substantially as described, for actuating the fork G, combined with the fork J, a pivoted support carrying said fork, lever L, lever M, a cam or eccentric for actuating the lever M, devices intermediate said cam and lever, and a device operated by the lever M to stop the loom, substantially as set forth.

2. In a loom, the batten B, bracket F carried thereby, fly or fork G, carried by the bracket F, and lever H, carried by the batten above the fly G and connected with the fly or fork G, in combination with the stop or tongue I, and support *f*, carrying said tongue, said stop or tongue being above the fly or fork G, substantially as described.

3. In a loom, the batten B, bracket F, shaft *a* on said bracket, fly or fork G and crank *b* on said shaft, lever H, and link *d*, said lever being above the fly or fork G, combined with the tongue I, and support *f*, carrying said tongue, said tongue being above the fly or fork G, substantially as described.

4. In a loom, the batten B, bracket F, shaft *a*, fly or fork G and crank *b* on said shaft, lever H, and link *d*, combined with the tongue I, and support *f*, carrying said tongue, and with the fork J, lever *h*,

404,407.



levers L and M, a cam or eccentric for actuating the lever M, devices intermediate said cam and lever, and a device operated by the lever M to stop the loom, substantially as described.

5. The batten B and the swinging fly or fork G carried thereby, and means, substantially as described, for actuating the fork G, combined with the fork J, lever *h*, levers L M, stop U, rod N, connected with the driving-gear, rod *r*, lever O, and cam P, all arranged for operation substantially as herein shown and described.

6. In a loom, the batten B, combined with the lever R, having a slight vertical movement, lever M^2, a cam or eccentric for actuating the lever M^2, devices intermediate said cam and lever M^2, and a device operated by the lever M^2 to stop the loom, as specified.

7. In a loom, the batten B, combined with the lever R, having opening *x*, pivot *w*, passing through said opening and carried by the support *v*, support *v*, spring *y*, lever M^2, a cam or eccentric for actuating said lever, devices intermediate said cam and lever M^2, and devices operated by the lever M^2 to stop the loom, as specified.

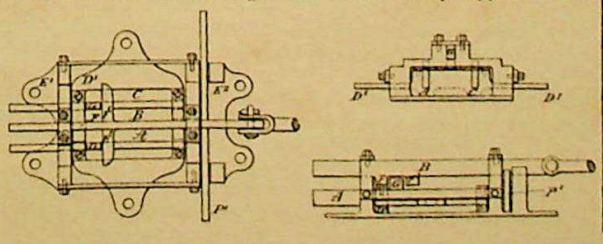
8. In a loom, the batten B, combined with the lever R, having a slight longitudinal movement, lever M^2, rod N, connected with the driving-gear, rod r^2, lever O^2, and cam P^2, all arranged for operation substantially as herein shown and described.

9. The batten B, bracket F, fork G, and lever H, connected to the fork and carried above the fly or fork G, combined with the tongue I, spring *g*, supporting the free end of said tongue, and support *f*, substantially as described.

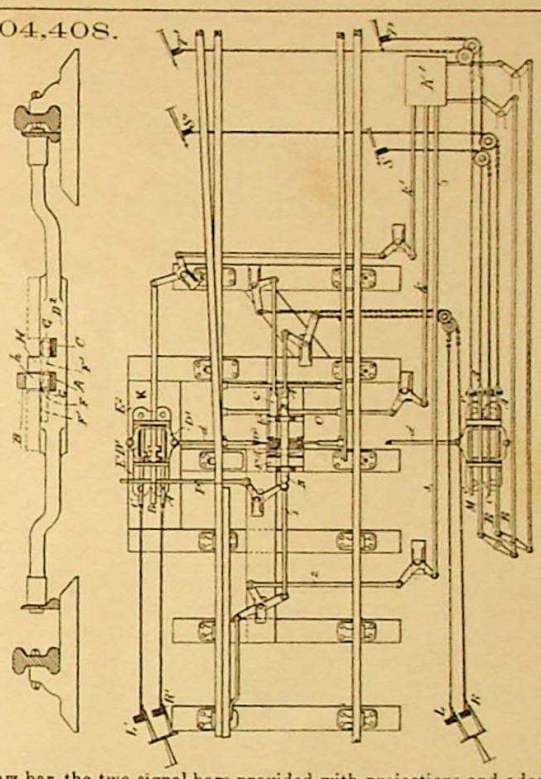
404,408. **WORKING AND INTERLOCKING RAILWAY SIGNALS AND POINTS.** JOSEPH HILL and JOHN P. O'DONNELL, London, County of Middlesex, England. Filed June 21, 1887. Serial No. 242,055. (No model.) Patented in England May 18, 1886, No. 6,661.

Claim.—1. The combination, with the draw-bar provided with long and short projections F' and F, and one rod for moving it lengthwise, of the two signal-bars provided with projections G and arranged one upon each side of the draw-bar and substantially parallel with it, and a second rod coupled to the points for opening and shutting them and simultaneously causing the respective signal-bar to engage with the draw-bar, so that it may subsequently be operated by the first-mentioned rod, substantially as set forth.

2. The combination, with the draw-bar provided with projections, and the rod for moving it lengthwise, of a stationary support for the



404,408.



draw-bar, the two signal-bars provided with projections and adapted to engage with those on the draw-bar and arranged one upon each side of the draw-bar, a support for the said signal-bars adapted to slide crosswise and rigidly connected to the points, and a second rod coupled to the points for opening and shutting them and simultaneously sliding the respective signal-bar into gear with the draw-bar, substantially as and for the purpose set forth.

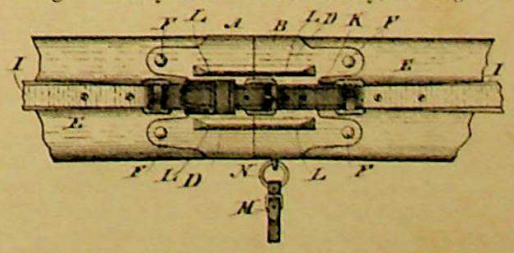
3. The combination, with the longitudinally-movable draw-bar provided with projections F' and F of unequal length, of a stationary support for the draw-bar, the two signal-bars arranged upon opposite sides of the draw-bar and provided with projections which are always in contact with the longer projections F' of the draw-bar, a support for the signal-bars rigidly connected to the points and adapted to slide crosswise with them, thereby causing the projections on the signal-bars to be slid between the said short and long projections on the draw-bar and placing the appropriate signal-bar in gear with the draw-bar according to the direction of the motion of the points, substantially as set forth.

4. The combination, with the longitudinally-movable draw-bar, of the two signal-bars arranged upon opposite sides of the draw-bar and adapted to engage with it, a stationary support for the draw-bar provided with one or more locking-holes for the signal-bars to enter when moved by the said draw-bar, and a support for the signal-bars rigidly connected to the points and adapted to slide crosswise with them and to place the appropriate signal-bar into gear with the draw-bar and in front of the locking-hole, substantially as set forth.

5. The combination, with the points, of the stretcher secured between the points and provided with holes for the signal-bars to slide in, the longitudinally-sliding draw-bar supported above the stretcher and provided with projections, and the two signal-bars provided with projections and adapted to engage with the said projections on the draw-bar, substantially as and for the purpose set forth.

404,409. **COLLAR-FASTENER.** JOHN HIMMELSTEIN, Milwaukee, Wis. Filed June 7, 1888. Serial No. 276,324. (No model.)

Claim.—The metal collar-fastener constructed in two parts secured to the two ends of the collar, respectively, the face of one part having a T-shaped recess or slot G extending laterally from one edge nearly across the face and the other part having a corresponding T-shaped tongue H nearly across its face laterally, the tongue H being



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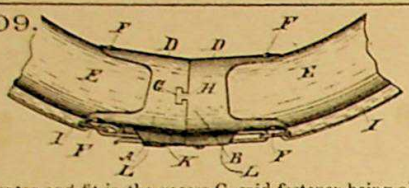
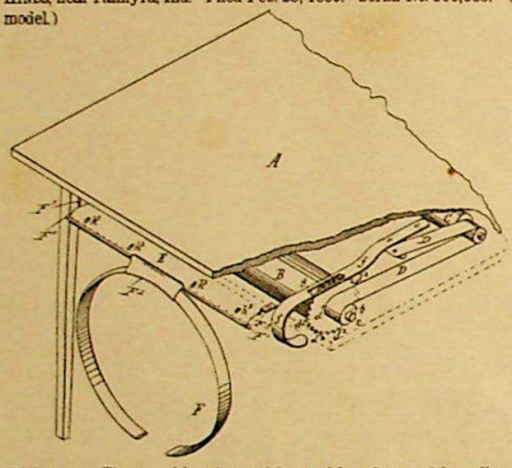


adapted to enter and fit in the recess G, said fastener being also provided with a set of flanges L L on its lower outer surface on the two parts of the fastener at right angles to the longer axis of the slot G and tongue H, and so located as to form a continuous channel when the two parts of the fastener are locked together, in which channel the hame-strap is adapted to fit, whereby the ends of the collar are retained in position against lateral movement with reference to each other, substantially as described.

404,410. NAPKIN-HOLDER TABLE ATTACHMENT. JOHN M. HINDS, near Palmyra, Ind. Filed Feb. 23, 1889. Serial No. 300,885. (No model.)



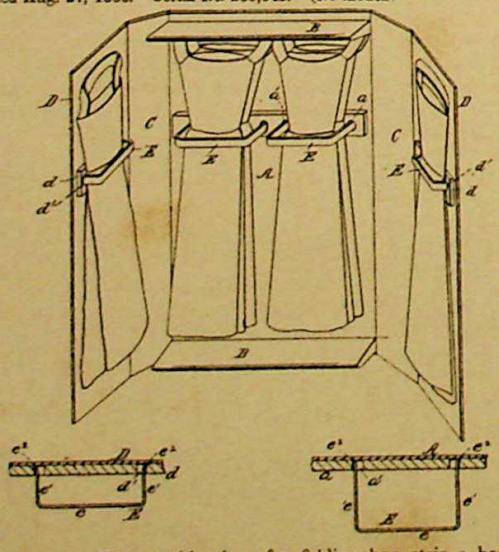
Claim.—1. The combination, with a table, of a napkin-roller applied underneath the top or frame of the table opposite the place where a person sits, upon and off which the napkin rolls, substantially as described.

2. The combination of a napkin-roller applied underneath the top or frame of the table opposite the place where a person sits, a napkin removably attached to it, and a split neckband removably attached to the napkin, substantially as described.

3. In a napkin-holder table attachment applied underneath the top or frame of the table opposite the place where a person sits, in combination, the napkin-roller, napkin, pawl, and ratchet, substantially as described.

4. The combination of the napkin-roller applied underneath the top or frame of the table opposite the place where a person sits, napkin, ratchet, pawl, and an automatic tension rolling-up device, substantially as described.

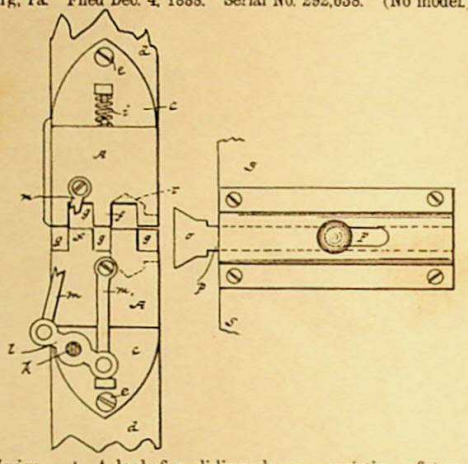
404,411. NECKTIE-HOLDER. GEORGE A. HUEWE, Cincinnati, Ohio. Filed Aug. 27, 1888. Serial No. 283,843. (No model.)



Claim.—1. The combination of a folding box, strip *a*, having openings *a'* and attached to the back of the box, and yoke E, having outwardly-springing legs *e'*, substantially as and for the purposes specified.

2. The combination of a folding box, strip *a*, having openings *a'* and attached to the back of the box, and yoke E, having outwardly-springing legs *e'*, provided with teeth e^3, substantially as and for the purposes specified.

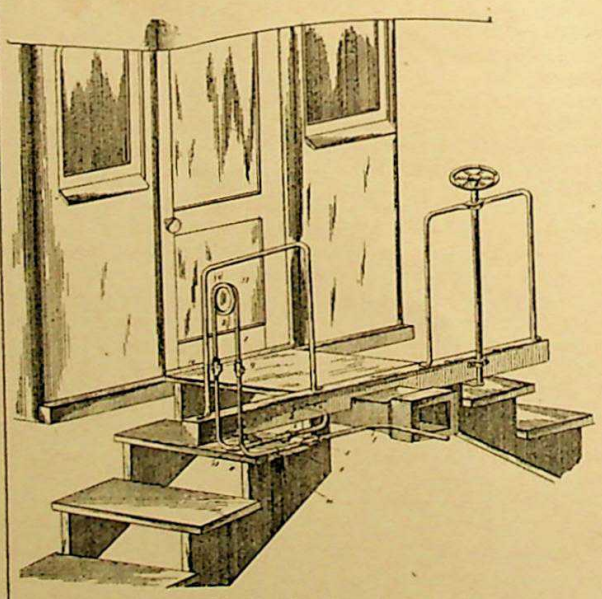
404,412. SLIDING-DOOR LOCK. STEPHEN W. HUNTON, Wilkinsburg, Pa. Filed Dec. 4, 1888. Serial No. 292,638. (No model.)



Claim.—1. A lock for sliding doors, consisting of two blocks limited to vertical movement in opposite directions on a fixed base, and having interlocking fingers formed in their opposing edges, and a recess for the reception of a bolt-head, and a headed bolt limited to endwise movement in a line at right angles to the line of movement of the blocks, substantially as and for the purpose described.

2. A lock for sliding doors, consisting of two sliding blocks limited to vertical movement in opposite directions on a guideway of a base, and having the interlocking fingers, and a recess formed in their opposing edges, an axially-turning shaft connected by intermediate devices with said blocks for adjusting the latter simultaneously in opposite directions, and a headed bolt, substantially as and for the purpose described.

404,413. PIPE-COUPLING. CYRUS F. HURREL, Holton, Kans. Filed Sept. 3, 1888. Serial No. 284,462. (No model.)



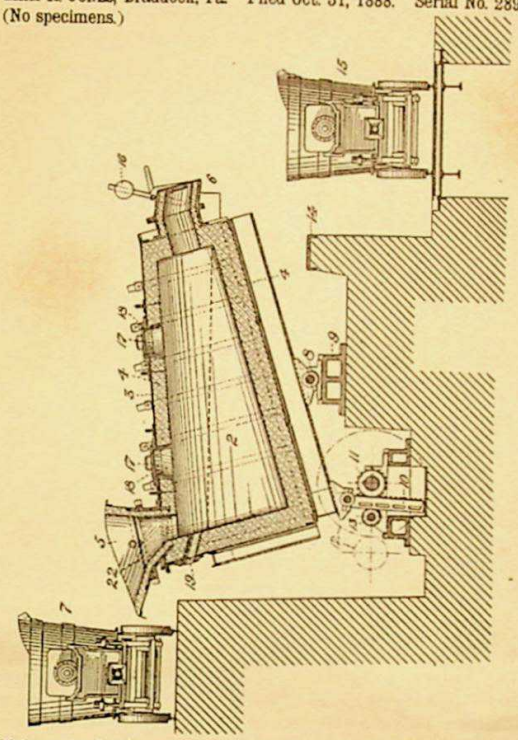
Claim.—1. A coupling for the steam-pipes of railway-cars, comprising a bent metallic pipe having two limbs and provided with one or more coils at the bend, the curvature of the coils being in the same plane with the arms and parallel with the direction of strain, and a connecting device for attaching it to the steam-pipes of abutting cars.

2. A coupling for the steam-pipes of railway-cars, comprising a bent metallic pipe having parallel limbs, both limbs being bent at an intermediate point and provided with one or more coils or turns at each bend to permit a ready yielding in the direction of strain, and a connecting device for attaching the coupling to the steam-pipes of abutting cars.

3. The combination of the pipes 1 and 2, attached to the cars, the

coupling connected thereto, said coupling being provided with parallel arms adapted to yield in the direction of strain, a coil connecting the arms, said coils being in the same plane with the arm and parallel with the direction of strain, and springs 13 14, as and for the purpose set forth.

404,414. METHOD OF MIXING MOLTEN PIG METAL. WILLIAM R. JONES, Braddock, Pa. Filed Oct. 31, 1888. Serial No. 289,672 (No specimens.)

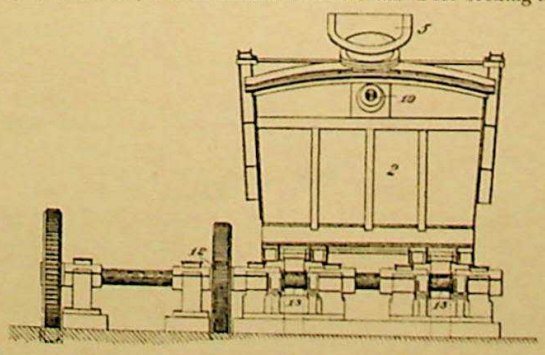


Claim.—1. In the art of refining iron directly from the smelting-furnace, the process of equalizing the chemical composition of the crude metal by thoroughly commingling or mixing together the liquid-metal charge and subsequently refining the mixed and equalized charge, substantially as and for the purposes described.

2. In the art of mixing molten metal to secure uniformity of the same in its constituent parts preparatory to further treatment, the process of introducing into a mixing-receptacle successive portions of molten metal ununiform in their non-metallic constituents, (sulphur, silicon, &c.,) removing portions only of the composite molten contents of the receptacle without entirely draining or emptying the same, and successively replenishing the receptacle with fresh ununiform additions, substantially as and for the purposes described.

404,415. APPARATUS FOR MIXING MOLTEN PIG METAL. WILLIAM R. JONES, Braddock, Pa. Filed Oct. 31, 1888. Serial No. 289,673. (No model.)

Claim.—1. An apparatus for receiving successive charges of molten metal from a blast furnace or furnaces and mixing the same previous to further treatment, consisting of an iron vessel having a refractory and heat-retaining lining, and being of substantially rectangular and trapezoidal shape in longitudinal cross-section, covered on top with a removable refractory-lined cover or covers, and furnished with suitable man-hole or man-holes, and having a charging-hopper at or near the top at one end and a discharge-opening at the other end placed above the surface level of the fluid metal when the vessel is in its normal position, said vessel resting on a pivotal support or supports located nearer to the discharge end than the center of gravity of the vessel, in combination with mechanism for rocking the



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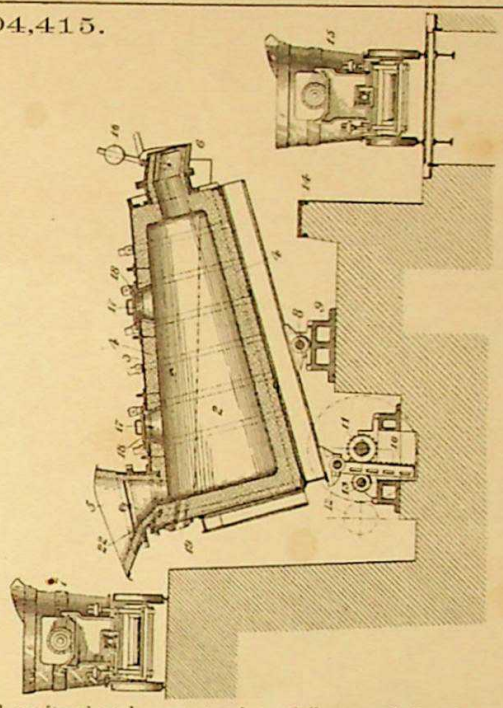
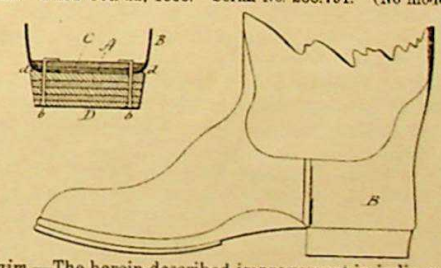


vessel on its pivotal support, substantially as and for the purpose hereinbefore described.

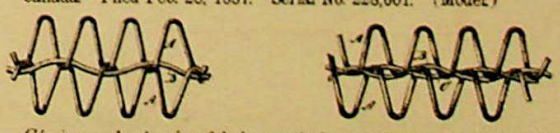
2. A mixing-vessel for molten metal, said vessel having a refractory lining, a heat-retaining cover, a charging-opening, and a discharging opening or spout, and provided with a pivotal support arranged forward of the center of gravity of the vessel, whereby the floor of the said vessel will normally incline downwardly from the discharge opening or spout toward the rear of the vessel, in combination with power mechanism for rocking the vessel on its pivotal support, substantially as and for the purposes described.

404,416. RUBBER BOOT OR SHOE. JOSEPH L. JOYCE, New Haven, Conn. Filed Oct. 22, 1888. Serial No. 288,791. (No model.)



Claim.—The herein-described improvement in india-rubber boots or shoes having solid heels, consisting in a boot having the lower edge of the counter turned over onto the insole, the heel portion of the outsole of an area smaller than the area of the heel portion of the boot, but the said heel portion of the sole joined to the inner edge of the turned-over portion of the counter, so as to leave a margin of the counter upon the heel-surface around the heel portion of the outsole, combined with a heel of hard material, its upper surface of an area corresponding substantially to the area of the heel portion of the boot and larger than the heel portion of the outsole, the heel applied and its outer edge resting directly upon the counter outside the edge of the outsole, and the said heel secured by nails through the heel and through the sole, the points of the nails turned down upon the inside of the sole, substantially as described.

404,417. WIRE MATTING. ISRAEL KINNEY, Windsor, Ontario, Canada. Filed Feb. 28, 1887. Serial No. 228,601. (Model.)



Claim.—1. A wire fabric consisting of flattened spiral coils A, interlocking with each other and lying in the same direction, and intermediate wires B, carried substantially parallel to said spirals and through the alternating coils of the adjacent spirals, substantially as described.

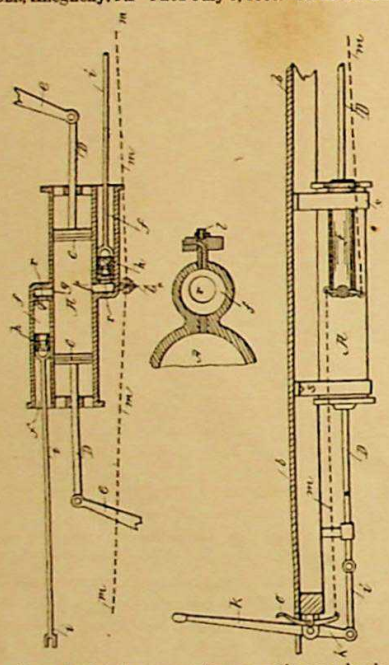
2. A wire fabric consisting of a series of spiral wires, as A, having the spirals interlocked, and wires B, running substantially in the direc-

tion of the spiral wires, each of said wires B passing through or interlocking with the alternate spirals or coils of the adjacent wires A, substantially as described.

3. In a wire fabric, the combination, with spirally-wound wires, of locking-wires engaging therewith and running in substantially the same direction as the spiral coils and crossing each other between the points where they engage with said coils, each locking-wire passing alternately over the wire of one coil and then under the wire of the adjacent coil, substantially as described.

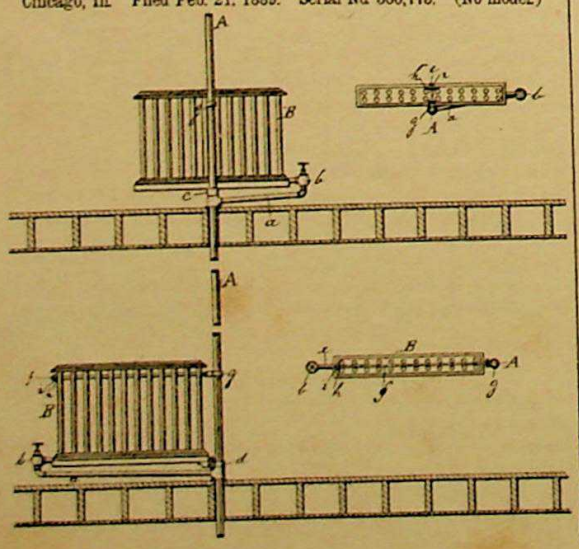
4. The fabric shown, consisting of the spiral coils A, connected by wires B and C, running in substantially the same direction as the coils and each engaging the adjacent coils alternately, substantially as described.

404,418. DEVICE FOR OPERATING CAR-BRAKES. ROBERT A. KISKADDEN, Allegheny, Pa. Filed July 9, 1888. Serial No. 279,456. (No model.)



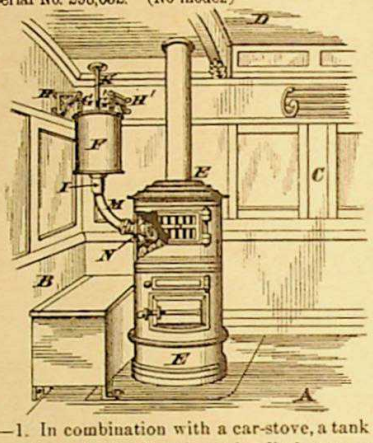
Claim.—In a device for manually operating car-brakes, the combination, with a main cylinder and two pistons arranged in opposite ends thereof, of two supplementary cylinders *f f*, arranged on opposite sides of said main cylinder and each communicating at one end with said main cylinder at a point between the two pistons therein, and having a check-valve *r*, a valved piston *h*, operating in each of the supplementary cylinders and connected with a hand-lever at the end of a car, a relief-valve *l*, communicating with said main cylinder at a point between the pistons thereof and having an axially-turning body, and a treadle *o*, connected with said relief-valve by an intermediate connection *m*, whereby air may be admitted to the brake-cylinder through the relief-valve and operate the pistons in the main cylinder to release the brake-shoes, substantially as and for the purpose described.

404,419. STEAM-HEATING DEVICE. HERMAN A. KROESCHELL, Chicago, Ill. Filed Feb. 21, 1889. Serial No. 300,773. (No model.)



Claim.—The combination, with a vertical stand-pipe extending from the basement through the several stories of the building, of a series of radiators, one for each story, rigidly secured to such stand-pipe to be entirely supported thereby, so as to move with such stand-pipe during expansion and contraction of the same, these radiators at the same time being connected with such stand-pipe for steam-circulation, all substantially as set forth, for the purpose specified.

404,420. AUTOMATIC EXTINGUISHER FOR CAR-STOVES. HERMAN LEVOY and FRANK DAGWELL, Cincinnati, Ohio. Filed Jan. 29, 1889. Serial No. 298,032. (No model.)

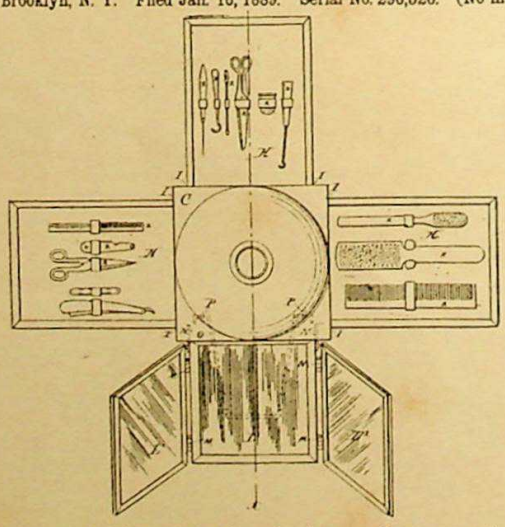


Claim.—1. In combination with a car-stove, a tank suspended by yielding supports, a pipe leading from the discharge-opening of said tank to said stove, a valve controlling said opening, and a stem that connects said valve with the upper part of the car, substantially as herein described.

2. In combination with a car-stove, as E, the tank F, suspended by springs G G', attached to brackets H H', a pipe M, leading from the seat I of said tank to said stove, a valve J, controlling the opening of said seat, and a stem K, that connects said valve with the upper part of the car, as herein described.

3. A flexibly-suspended tank connected by a metallic pipe to a fixed car-stove, the discharging end of said pipe being free to move within the stove-coupling, substantially as herein described, and for the purpose stated.

404,421. COMBINED LAMP AND TOILET-CASE. FRANK MAEHR, Brooklyn, N. Y. Filed Jan. 16, 1889. Serial No. 296,526. (No model.)



Claim.—1. The combination of a lamp and a support therefor, the sides whereof are hinged, substantially as set forth, and provided internally with toilet or similar utensils, substantially as and for the purposes described.

2. The combination of a lamp and a support therefor, the sides whereof are hinged substantially as set forth, and provided internally with toilet or similar utensils and a base connected with the support for the lamp by a swivel-connection, substantially as and for the purposes described.

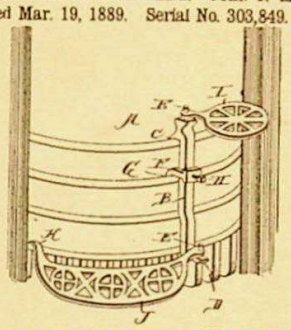
3. The combination of a lamp and a support therefor, a part of the sides whereof consist of a folding mirror constructed and arranged substantially as set forth, whereby it may be folded upon itself and swung into place as a part of the support for the lamp and a support for the mirror when unfolded, which is attached to the support for the lamp and rests against the mirror, substantially as set forth.

4. A lamp the support whereof is constructed and arranged to receive toilet or equivalent articles, and a door in the side of the support, whereby the said articles may be reached without removing the lamp, substantially as set forth.

404,422. COUGH-SIRUP. WILLIAM A. MAXWELL and OSCAR E. MEDDAUGH, Lakeport, Cal. Filed Mar. 6, 1889. Serial No. 302,123. (No specimens.)

Claim.—The herein-described composition of matter to be used as a medicine, consisting of extract of eriodictyon glutinosum, senega, squills, spirits of chloroform, glycerine, and sirup, in the proportions specified.

404,423. GRATE ATTACHMENT. JOHN J. MITCHELL, Birmingham, Ala. Filed Mar. 19, 1889. Serial No. 303,849. (No model.)



Claim.—1. A grate attachment comprising a shelf-supporting bar provided at its upper end with a hook adapted to engage the grate-bar and at its lower end with a forwardly-projecting lug and the shelves pivotally mounted on said lug and the upper end of the bar, as set forth.

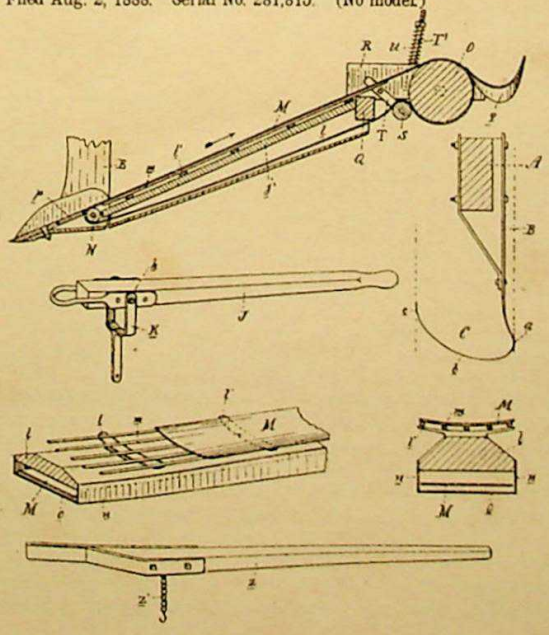
2. The combination of the shelf-supporting bar provided at its upper end with a hook adapted to engage the grate-bars and a pivot-pin projecting vertically from said end and provided at its lower end with a forwardly-projecting lug and a pivot-pin on the upper side of said lug, the shelves mounted on the pivot-pins, and the clamping-bar adapted to pass around the supporting-bar and engage one of the grate-bars and be clamped to the supporting-bar, as set forth.

3. The combination of the shelf-supporting bar provided at its upper end with a hook adapted to engage the grate-bar, the swinging shelf mounted on the said supporting-bar, the clamping-bar passing on opposite sides of the shelf-supporting bar and provided with depending hooks adapted to engage the grate-bar, and the set-screw mounted in said clamping-bar and bearing against the shelf-supporting bar, as set forth.

4. In a grate attachment, the combination of the shelf-supporting bar and the extended shelf pivotally mounted at the lower end of said bar and provided at its free end with a depending hook adapted to engage one of the grate-bars, as set forth.

5. In a grate attachment, the shelf-supporting bar clamped to the grate, the shelf I, pivoted to the upper end of the said bar, and the shelf J, pivoted to the lower end and having the hook K at its outer end to engage one of the grate-bars, as set forth.

404,424. DITCHING-PLOW. RUSSELL H. NOGAR, Dundee, Mich. Filed Aug. 2, 1888. Serial No. 281,815. (No model.)



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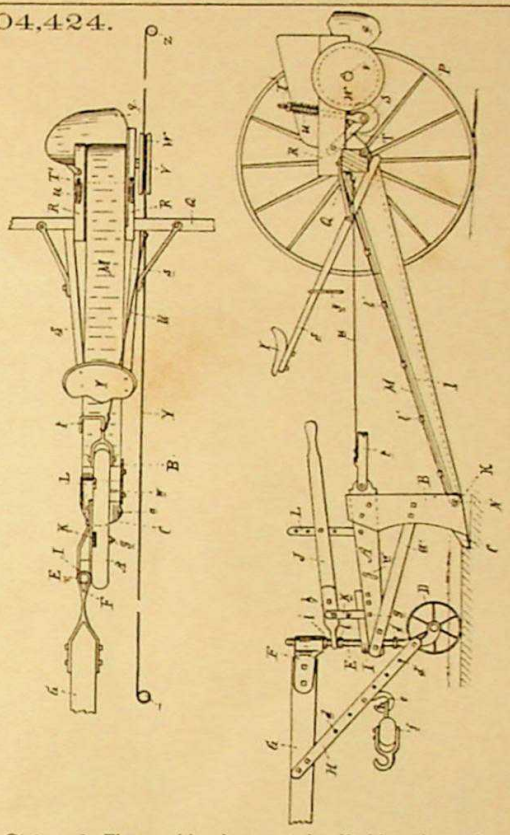


Claim.—1. The combination, with the ditching-plow, of a carrier mounted on a truck at the rear of the plow and having a hinged connection at its forward end with the scoop or plow, and the adjustable draft-connection with the rear end of the plow-beam, said connection being pivoted at one end to the plow-beam, substantially as described.

2. In a ditching-machine, the combination, with the ditching-plow, of the carrier mounted on the truck at the rear of the plow and having pivotal connection at its forward end therewith, and the adjustable draft-connection between the rear end of the plow and said truck, said draft-connection being pivoted at one end to the plow-beam and under the control of the operator, substantially as described.

3. In a ditching-machine, the combination, with the ditching-plow, of a carrier pivotally secured at its forward end to the scoop or plow and mounted with its rear end upon the truck, and a draft-connection between said truck and the rear end of the plow in the line of draft, consisting of the foot-lever *t* and the draft-connection *u*, substantially as described.

4. In a ditching-machine, the combination of the following elements: the ground-wheel mounted on a vertical standard, the draft devices applied thereto, the plow-beam provided at its forward end with the vertical bearing engaging with the standard of the ground-wheel, the scoop or plow secured to the rear end of the plow-beam, the raising and lowering device mounted upon the plow-beam, the carrier pivotally secured at its forward end to the plow and mounted at its rear end upon the truck, and the adjustable connection between the rear end of the plow and the truck, said connection consisting of the foot-lever *t* and the draft-connection *u*, substantially as described.

5. The combination, with the plow of a ditching-machine, of the endless carrier pivotally secured at its forward end to the rear end of the plow and mounted at its rear end upon a truck, a carrier-pulley mounted upon the truck and to which motion is applied, and a friction-pulley mounted below such carrier-pulley and pressing the belt against the face of the carrier-pulley, substantially as described.

6. The combination, with the plow of a ditching-machine, of a carrier consisting of the endless belt M, secured at its forward end to the plow and mounted at its rear end upon a truck, the belt-pulley O, mounted in suitable bearings upon the frame of the truck, the adjustable friction-pulley S, mounted in contact with the belt-pulley, the shaft V of the belt-pulley, and the grooved drive-pulley W, substantially as described.

7. The combination, with the ditching-plow, the carrier mounted in the rear thereof and supported upon the truck, the drive-shaft V of the carrier, the grooved pulley W upon said drive-shaft, and the wire rope Y, the parts being arranged to operate substantially as and for the purpose described.

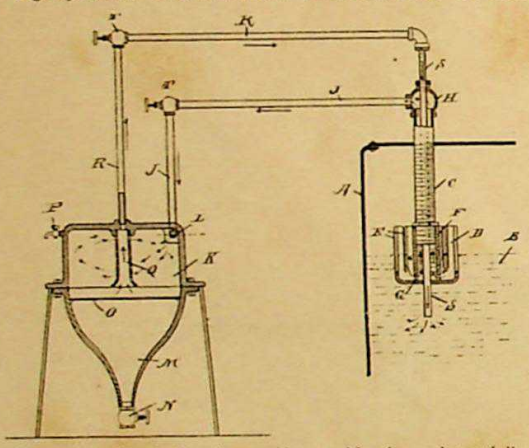
8. In a ditching-machine, the combination of the following elements: the ground-wheel D, the vertical standard E, carrying such

ground-wheel, the draft-bar H, the draft-connection adjustably secured to the draft-bar, the plow-beam provided at the forward end with the bearing I, into which the standard E engages, the raising and lowering lever J, pivotally mounted on top of the plow-beam and engaging by its forward end with the standard E, the adjusting devices of that lever, the scoop C, mounted on the standard B, the endless carrier M, the roller N, mounted in the scoop of the plow, the truck upon which the rear end of the carrier is mounted, the carrier-pulley O, over which the rear end of the carrier-belt passes, the friction-pulley S, the drive-pulley W, and the seat R, mounted on the rear truck in proximity to the rear end of the plow, substantially as described.

9. In a ditching-machine, the plow consisting of the plow-beam, the standard secured thereto, and the scoop secured to the lower end of the standard and having the digging portions *a*, *b*, and *c*, substantially as described.

10. In a ditching-machine, the combination of the ditching-plow, the carrier pivotally secured to the rear end of the ditching-scoop and mounted with its rear end upon the truck, a flexible draft-connection between the plow and the truck, the loop *w*, secured to the plow-beam, the lever *z*, and the hanger *y*, substantially as and for the purpose described.

404,425. BOILER-CLEANING APPARATUS. JOHN T. OBENCHAIN, Logansport, Ind. Filed Jan. 4, 1889. Serial No. 295,382. (No model.)



Claim.—1. In a boiler-cleaner, the combination, substantially as set forth, with a precipitating-chamber, a pipe leading thereto from the boiler, and a pipe leading therefrom to the boiler, of a skimmer within the boiler, having the form of a cup whose peripheral wall is provided with vertical slots having a uniform effective area throughout vertical depth, said first-mentioned pipe projecting downwardly into said cup and communicating with the interior thereof near the floor of the cup.

2. In a boiler-cleaner, the combination, substantially as set forth, with a precipitating-chamber, a pipe leading thereto from the boiler and a pipe leading therefrom to the boiler, of a skimmer within the boiler and attached to said first-mentioned pipe and having the form of a cylindrical cup whose peripheral wall is provided with vertical slots having a uniform effective area throughout the vertical depth, said first-mentioned pipe projecting downwardly into said cup and communicating with the interior thereof near the floor of the cup.

3. In a boiler-cleaner, the combination, substantially as set forth, with a precipitating-chamber, a pipe leading thereto from the boiler, and a pipe leading therefrom to the boiler, of a skimmer having the form of a cup with a vertically-slotted periphery and communicating with said first-mentioned pipe near the bottom of the cup only and below the level of the lower ends of said slots.

4. In a boiler-cleaner, the combination, substantially as set forth, with a precipitating-chamber, a pipe leading thereto from the boiler, and a pipe leading therefrom to the boiler, of a skimmer having the form of a cup with a vertically-slotted periphery, and having a central hollow hub connected with said first-mentioned pipe, and having apertures leading from the base of the cup to within the base of the hub.

5. In a boiler-cleaner, the combination, substantially as set forth, with a precipitating-chamber, and a pipe leading therefrom to the boiler, of a vertical skimmer-pipe having a threaded portion projecting downwardly into the boiler, a pipe connecting the said skimmer-pipe with the precipitator, and a slotted cup-shaped skimmer screwed upon the lower end of said skimmer-pipe and vertically adjustable thereon.

6. In a boiler-cleaner, the combination, substantially as set forth, of a precipitating-chamber, a skimmer within the boiler, a pipe leading from said skimmer vertically through the boiler-shell and thence to the precipitator, and a pipe leading from the precipitator to said vertical pipe and passing downwardly within the same and through the skimmer and into the boiler-space below the skimmer.

7. In a boiler-cleaner, the combination, substantially as set forth, of a precipitating-chamber, a skimmer within the boiler, a pipe-T outside the boiler over the skimmer, a skimmer-pipe connecting the T with the skimmer, a pipe connecting the precipitator with said T and skimmer-pipe, and a pipe passing from below the skimmer upwardly through said skimmer and skimmer-pipe and out of said T, and thence to the precipitator.

8. In a boiler-cleaner, the combination, substantially as set forth, of a skimmer, a precipitating-chamber having a circular inwall, a pipe leading from said chamber to the boiler below the skimmer, and a pipe leading from the skimmer to said chamber and connected with said chamber at an outer point, and arranged to discharge tangentially against and cause the discharge to follow the complete circle of said inwall.

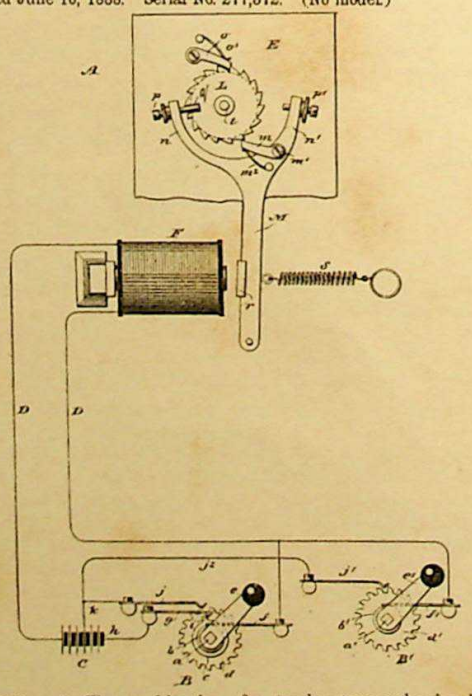
9. In a boiler-cleaner, the combination, substantially as set forth, of a skimmer, a precipitating-chamber, a pipe leading from the skimmer to the outer portion of the precipitating-chamber, and a pipe leading from the boiler-space below the skimmer to a point in the precipitating-chamber below the point of connection with said first-mentioned pipe.

10. In a boiler-cleaner, the combination, substantially as set forth, of a skimmer, a precipitating-chamber, a pipe leading from the skimmer to a tangential inlet at the outer portion of the precipitating-chamber, a centrally-disposed pipe projecting downwardly from the roof of the precipitating-chamber, and a pipe connecting said pipe with the boiler-space below the skimmer.

11. In a boiler-cleaner, the combination, substantially as set forth, of a skimmer, a napiform precipitating-chamber having a completely circular inwall, a clean-out valve at the base of the chamber, a pipe leading from the skimmer to the precipitating-chamber and discharging tangentially against the circular inwall thereof, and a pipe leading from the precipitating-chamber to the boiler-space below the skimmer.

12. In a boiler-cleaner, the combination, substantially as set forth, of a skimmer, a precipitating-chamber, a horizontal perforated septum in the chamber, a clean-out valve at the base of the chamber, a pipe connecting the skimmer with the chamber above the septum, and a pipe leading from the boiler-space below the skimmer to the chamber above the septum.

404,426. UNISON DEVICE. GEORGE F. OEHMEN, New York, N. Y. Filed June 16, 1888. Serial No. 277,372. (No model.)



Claim.—1. The combination of a step-by-step mechanism having a moving part formed with a unison-notch, a unison-stop normally resting in said notch and holding the step-by-step mechanism from movement when resting therein and until removed therefrom by an abnormal amount of power, a battery, a line, and an included magnet controlling said step-by-step mechanism, a unison-transmitter located in said line and connected at an intermediate point of the battery, so as to transmit a diminished amount of energy to said step-by-step mechanism, and a second transmitter located in the line connected with said battery controlling the full amount thereof, whereby the

unison-stop will be dislodged from its notch by the full amount of current and the step-and-step mechanism operated by the normal current.

2. The combination of a step-by-step mechanism, a unison therefor holding said step-by-step mechanism from operation under normal currents when held at unison, a battery, a line-wire, and an included electro-magnet controlling said step-by-step mechanism, and a transmitter located in the line and connected to battery at more than two points and itself governing both the full and partial amount of battery thrown on said line.

3. In a unison device, the combination of step-by-step mechanism having a moving part provided with a unison-notch, a unison-stop for engaging the notch, an electro-magnet having an armature controlling the movements of the unison stop, a battery, and a line connected therewith and including the said magnet, transmitting apparatus located in the line and controlling at will part or all of the battery-power transmitted to the magnet, the said armature having a range of movement such that when the armature is in full open position to close the unison-stop the diminished amount of current will not induce it but the full amount will, substantially as and for the purpose set forth.

4. In a unison device, the combination of step-by-step mechanism having a moving part provided with a unison-notch, an electro-magnet having a spring-retracted armature provided with a unison-stop for engaging the unison-notch, a battery and a connected line, including the said magnet, two transmitters located in the line, one controlling only a part of the battery and the other controlling both a part and all of the battery, the range of movement of the armature being such that when the armature is in full open position to close the unison-stop and part only of the battery is thrown on the line the armature will be out of inductive proximity to the magnet, substantially as and for the purpose set forth.

5. In a unison device having the armature of the operating-magnet out of inductive proximity thereto when in full open position and the diminished amount of current is thrown on the magnet and operated by the full amount of the current, substantially as described, two transmitters located in the line with the magnet, the one controlling only a part of the battery and the other both a part and all of the battery, substantially as and for the purpose set forth.

6. A combined step-by-step mechanism and unison consisting in an operating-magnet having a pivoted spring-retracted armature with a spring-pawl and a unison-stop, both mounted thereon, a rotary spindle provided with a ratchet-wheel, and a detent for the wheel, said ratchet operated step by step by the engaging-pawl of the armature under the vibrations of the latter, the rotating part of said mechanism provided with a unison-notch engaged by the unison-stop carried by the said armature, substantially as and for the purpose set forth.

7. The combination of the operating-magnet having a pivoted spring-retracted armature provided near one end with an adjustable unison-stop, a spring-pawl mounted on the armature near the end thereof bearing the stop, a ratchet-wheel having a detent and formed with a unison-notch engaged by the stop on the armature.

8. The combination of a ratchet-wheel, an operating-magnet having a pivoted spring-retracted armature provided with a forked end spanning the ratchet-wheel, and having a spring-pawl for engaging the ratchet and rotating it step by step under the vibrations of the armature, a detent for the ratchet, one prong of said forked armature provided with a unison-stop for checking the movement of the ratchet, the other prong thereof provided with an adjusting-screw for regulating the throw of the magnet in its vibrations, substantially as and for the purpose set forth.

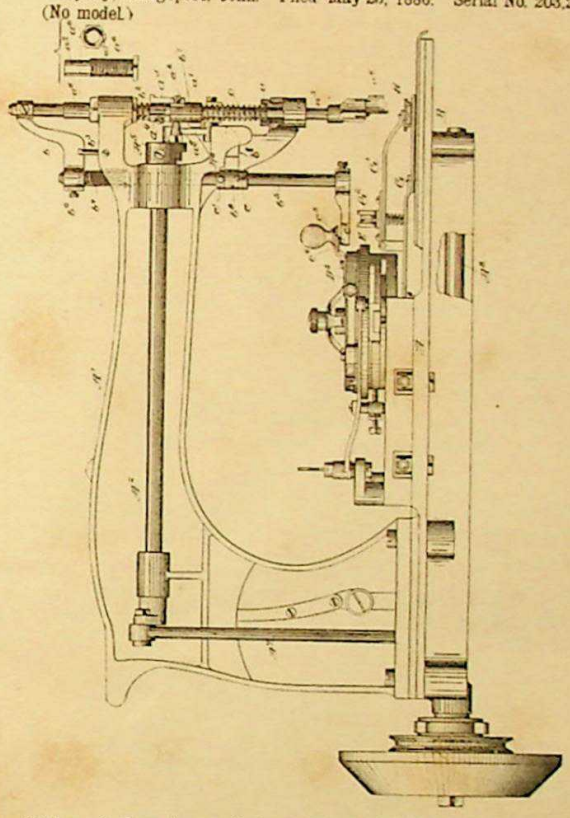
9. The combination of a step-by-step mechanism having a unison-stop for checking its movement, the electro-magnet F, controlling said mechanism and stop, battery C and line D, connected thereto, the transmitter B, consisting in shaft *a*, provided with contact-disk *b* and break-wheels *c* and *d*, the contact-finger *f*, engaging disk *b* and in line D, the contact finger *e*, engaging the break-wheel *c* and in line D, the contact-finger *j*, connected to an intermediate point of battery C and engaging with break-wheel *d*, the transmitter B', consisting in the shaft *a'*, provided with contact-disk *b'* and break-wheel *d'*, the contact-finger *f'* in line D and engaging disk *b'*, and the contact-finger *j'*, engaging wheel *d'* and connected to an intermediate point of the battery, as at point *k*, substantially as and for the purpose set forth.

10. The combination of the rotating spindle and ratchet-wheel, a detent for holding the parts from backward movement, the electro-magnet F, line D, battery C, and the transmitters B B', one controlling part and the other controlling both part and all of the battery, substantially as described, the pivoted spring-retracted armature M, provided with the unison-stop *p* for taking in a unison-notch formed on the rotating part of the mechanism, and the spring-pawl *m*, mounted on the armature and engaging the ratchet-wheel, substantially as and for the purpose set forth.

11. The combination of the ratchet-wheel L, formed with a notch and provided with a detent to prevent backward movement of the ratchet, the operating-magnet F, having the pivoted spring-retracted armature M, formed with the prongs *n n'*, the unison-stop *p*, mounted on the armature and adapted to engage the notch in the ratchet-wheel, and the spring-acted pawl *m*, engaging the teeth of the ratchet and advancing the wheel step by step under the vibrations of the armature, substantially as and for the purpose set forth.

404,427. CUTTING MECHANISM FOR BUTTON-HOLE SEWING-MACHINES.

FREELAND W. OSTROM, Bridgeport, and JOHN W. BOYNTON, Stratford, assignors to The Wheeler & Wilson Manufacturing Company, Bridgeport, Conn. Filed May 25, 1886. Serial No. 203,207. (No model.)



Claim.—1. In a button-hole sewing-machine, the combination, with the work-clamp and its operating cam or disk, of a cutter-bar, operating mechanism therefor, a cutter carried by said bar, and a tripping device to throw the cutter-bar-operating mechanism into action, said tripping device having two members, one of which members, as arm or projection c^4, is connected to and moved in unison with the said clamp-operating cam or disk, and is thus a traveling member, the other member of the tripping device, as the arm or projection c^2, being normally stationary in the path of movement of a part of the said traveling member, one of the said members being adjustable or movable with relation to the normal path of movement of the said traveling member to enable the latter to pass the said stationary member without engagement therewith when desired.

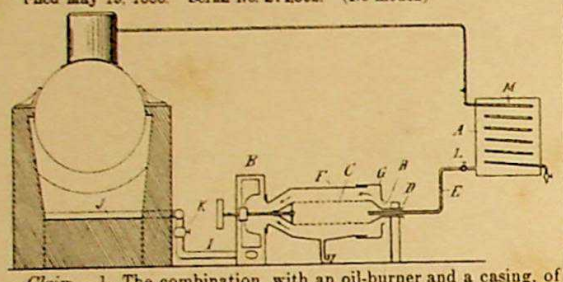
2. In a button-hole-stitching machine, a feeding-clamp, a cutter-bar, its cutter, the attached collar a^4, having a finger, a pin or projection, as *b'*, carried by the cutter-bar, a spring to partially rotate the cutter-bar in one direction, needle-actuating mechanism, and a pin or projection deriving its movement therefrom to strike the said collar a^4 and depress the cutter-bar, combined with a movable beak or arm to co-operate with the said pin or projection of the cutter-bar and retain the cutter with its edge turned aside out of operative position with relation to the material to be cut and tripping mechanism, to operate substantially as described.

3. In a button-hole-stitching machine, a feeding-clamp, the cutter-bar and cutter, means to reciprocate and partially rotate the said bar, the tripping-rod having an arm c^2, the feed-clamp-actuating disk having a projection to act upon the said arm, and a beak to act against a pin or projection of the cutter-bar, combined with a spring to hold the said tripping-rod in its normal position, to operate substantially as described.

4. In a button-hole-stitching machine, a cutter, a cutter-bar having a projection *b'* and a projection b^3 moved in unison with it, means to reciprocate the cutter-bar, a spring to partially rotate the cutter-bar in one direction, a feed-clamp, and a feed-clamp-actuating disk having an attached tripping arm or projection, and a tripping-rod hav-

ing two arms or projections, one of which holds the cutter-bar turned aside, while the other arm rests in the line of travel of the tripping-arm made movable with the said disk, combined with an arm b^8, projecting from the tripping mechanism and located in the line of travel of the said projection b^7 of the cutter-bar, whereby the latter in its descent moves the tripping-arm longitudinally, substantially as described.

404,428. OIL-BURNER. GEORGE S. PAINE, Wyandotte, Mich. Filed May 19, 1888. Serial No. 274,392. (No model.)

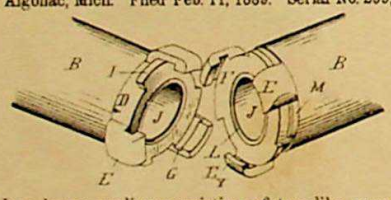


Claim.—1. The combination, with an oil-burner and a casing, of a fan, a tank, the perforated spraying-drum located within said casing, the supply-pipe from the tank entering the spraying-drum, and the discharge-connections from the fan to the furnace, substantially as described.

2. The combination, with the casing, a fan, the spraying-drum located within said casing and having a hollow trunnion and secured upon the axis of the fan, the supply-pipe to said drum, the head, means for adjusting the same, the tank, the heating-coil for heating the oil therein, and the discharge-pipes I J into the furnace, substantially as and for the purpose specified.

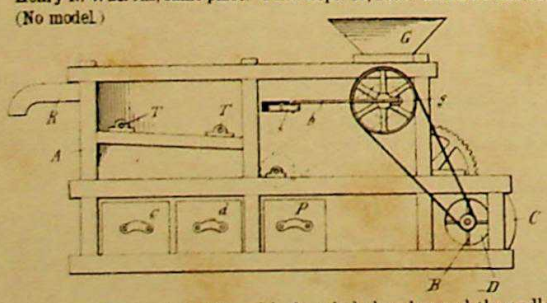
3. The combination, with an oil-burner, of a fan, a casing, and an oil-spraying device located within said casing, means for revolving the fan and sprayer, and an oil-supply pipe for bringing oil into said spraying device, substantially as described.

404,429. HOSE-COUPLING. SPAIN E. PEARCE and GEORGE W. MERRILL, Algonac, Mich. Filed Feb. 11, 1889. Serial No. 299,484. (No model.)



Claim.—In a hose-coupling consisting of two like members, the combination, with the grooved coupling-hooks E, with the spaces between the hooks formed with the plain part H and segmental flange I, of the stop M, arranged at right angles to the axis of the coupling and adapted to enter between two pairs of coupling-hooks when coupled, the spring O beneath said stop, and the elastic rings set angularly around the mouth of each of the members of the coupling, substantially as shown and described.

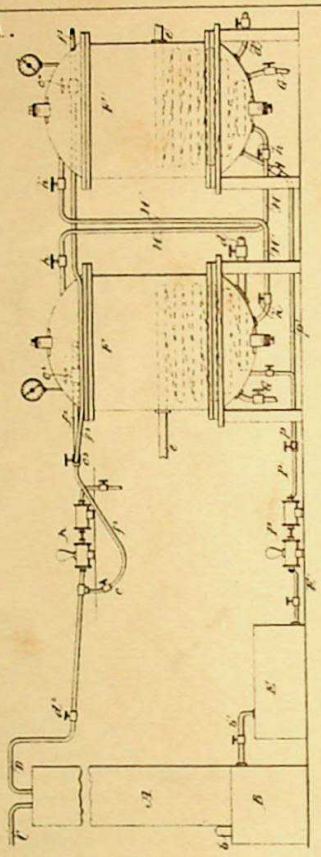
404,430. COFFEE-CLEANING MACHINE. CHANCY J. PICKETT, Bay City, Mich., assignor of two-thirds to Willard I. Brotherton and Henry N. Watrous, same place. Filed Sept. 19, 1888. Serial No. 285,788. (No model.)



Claim.—The combination, with the wind-chamber and the endless carrier, of the inclined direction-board U, loosely attached at one end to the frame of the machine and its other end riding loosely upon said carrier, substantially as described.

404,431. PROCESS OF DISINTEGRATING FIBROUS MATERIALS. RAOUL P. PICTET, Geneva, assignor of one-half to George L. Brelaz, Lausanne, Switzerland. Filed Aug. 19, 1887. Serial No. 247,371. (No model.) Patented in France Apr. 6, 1887, No. 182,693; in Belgium Apr. 7, 1887, No. 77,003; in England Apr. 9, 1887, No. 5,269; in Sweden Apr. 13, 1887, No. 1,222; in Germany Apr. 15, 1887, No. 41,703; in Norway Apr. 20, 1887, No. 523, and in Austria-Hungary Dec. 24, 1887, No. 31,579 and No. 60,831.

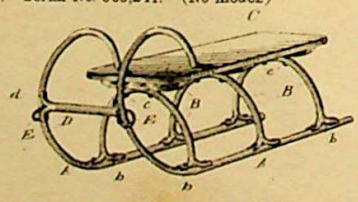
404,431.



Claim.—1. The herein-described process in the production of cellulose, which consists in immersing the fibrous material in a solution of sulphurous acid of normal temperature and of a strength of about 1° Baumé, gradually increasing the strength of the solution to sursaturation and gradually increasing the temperature thereof to about 100° centigrade by passing heated sulphurous-acid vapors into said solution, substantially as and for the purposes specified.

2. The herein-described process in the production of cellulose, which consists in immersing the fibrous material in a solution of sulphurous acid of normal temperature and of a strength of about 1° Baumé, in a partial vacuum, gradually increasing the strength of the solution to sursaturation, and gradually increasing the temperature thereof to about 100° centigrade by passing heated sulphurous-acid vapors into said solution, substantially as and for the purposes specified.

404,432. SLED. LYMAN B. PICKETT, Montrose, Pa. Filed Mar. 29, 1889. Serial No. 305,241. (No model.)



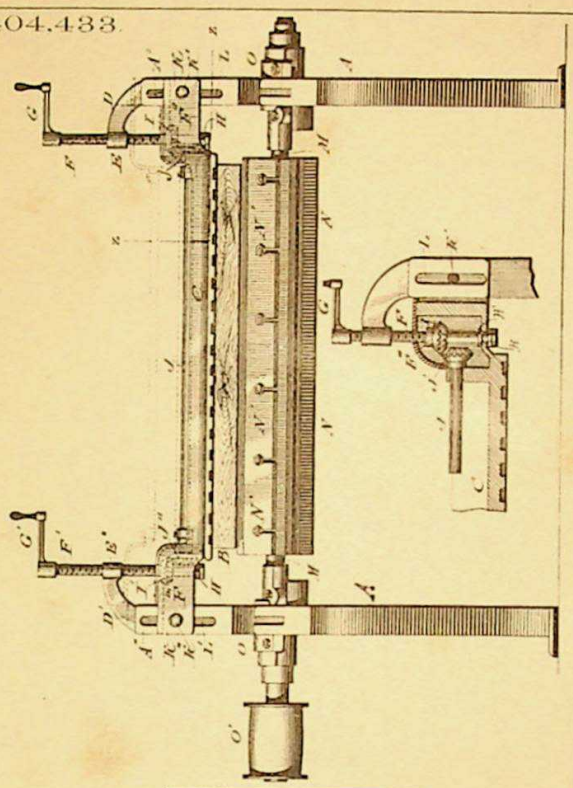
Claim.—The runners A, constructed of metal tubing, and plat form C, in combination with the knees B and cross-bar D, having their ends split and spread at right angles and secured to the tubular runners, substantially as and for the purpose herein set forth.

404,433. WOOD-PLANING MACHINE. FRANK J. PLUMMER, Philadelphia, Pa. Filed Dec. 22, 1888. Serial No. 294,437. (No model.)

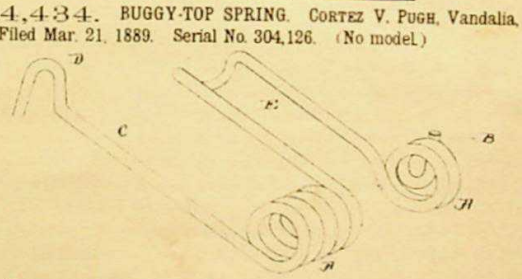
Claim.—1. In a planing-machine, the combination of the uprights A′ A″, arms or projections D D′, right and left screw-threaded rods F F′, carriages F‴ F⁗, guided by connecting-pieces setting in grooves in the uprights and rigidly attached to a pressure-bar C, shaft J, sustained by said carriages, with the gear-wheels to actuate the shaft, substantially as shown, whereby the said gearing rises and falls with the pressure-bar.

2. In a planing-machine, the combination of the uprights A′ A″, arms or projections D D′, right and left screw-threaded rods F F′, closed boxes F‴ F⁗, forming vertically-moving carriages for shaft J and pressure-bar C, pressure-bar C and shaft J, and the gear-wheels to actuate said shaft and to rise and fall therewith and with the pressure-bar, substantially as described.

404,433.

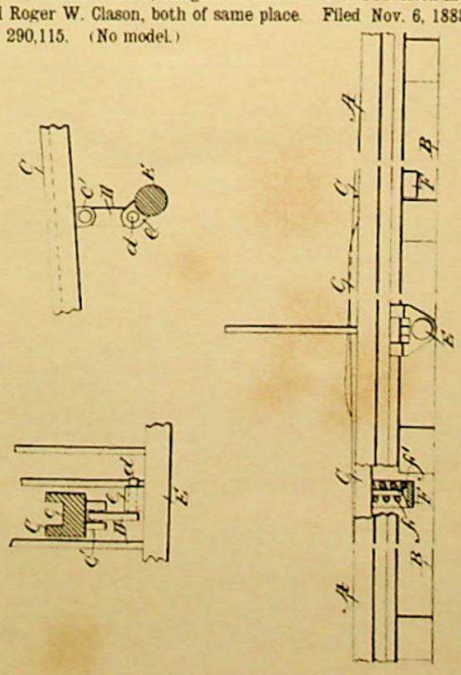


404,434. BUGGY-TOP SPRING. CORTEZ V. PUGH, Vandalia, Mo. Filed Mar. 21, 1889. Serial No. 304,126. (No model.)



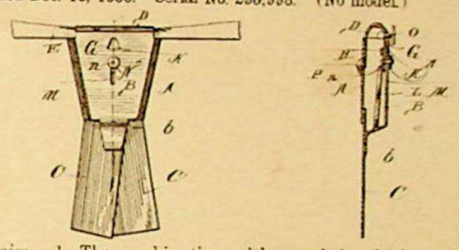
Claim.—The improved spring for buggy-tops herein described and shown, consisting of a central coiled portion having the hook B at one end, the arm C at its other end provided with the hook D, and the intermediate U-shaped rest or supporting-arm E, substantially as specified.

404,435. AUTOMATIC GUARD FOR RAILROADS. JOHN V. REAMS, Midland, Mich., assignor of two-thirds to Frederick L. Beacham and Roger W. Clason, both of same place. Filed Nov. 6, 1888. Serial No. 290,115. (No model.)



Claim.—In an automatic cattle or other guard for railroads, the combination of the auxiliary rails C, pivoted at one end, forks *c'*, secured thereto, carrying links D, provided with arms *d*, shafts E, secured in bearings and provided with teeth or pickets, lugs *e*, secured to the said shafts E, for receiving the arms *d*, and coil-springs *f*, seated in cups F and held in position by means of pins *f'*, secured to the auxiliary rails, as and for the purpose described.

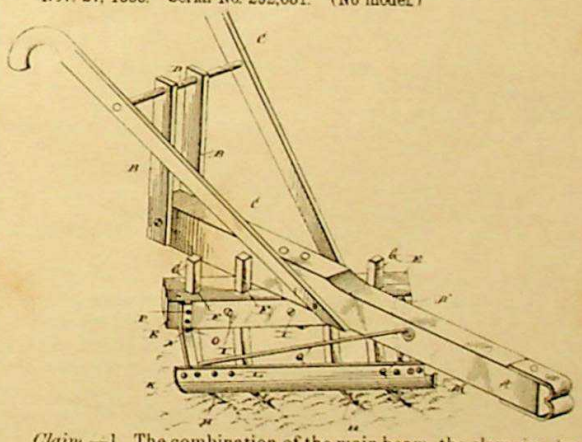
404,436. NECKTIE-FASTENER. JOSEPH REIDL, Lewiston, Idaho. Filed Dec. 18, 1888. Serial No. 293,998. (No model.)



Claim.—1. The combination, with a necktie which is provided in its rear side with opening G to receive the collar-button, of the spring-actuated slide or catch arranged adjacent to the said opening to close the same, substantially as specified.

2. The combination, with a necktie provided with an opening G for the collar-button and having a brace *b* below the said opening, of the vertically-movable slide or catch K, having a concaved upper end to close the opening G and provided with an operating-button N, and the S-spring L, connected at its upper end to the slide or catch and bearing at its lower end on the brace *b*, whereby the slide or catch is normally held in its elevated or engaging position, substantially as specified.

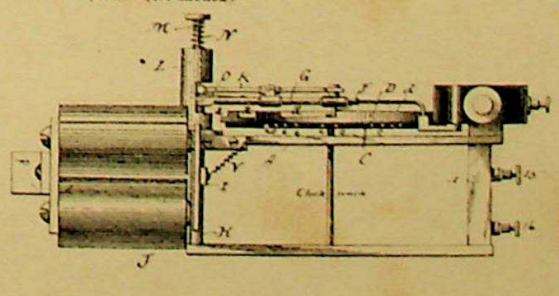
404,437. CULTIVATOR. CHARLES H. RUDDELL, Terrell, Tex. Filed Nov. 27, 1888. Serial No. 292,031. (No model.)



Claim.—1. The combination of the main beam, the clamping-bars secured to the under side of the beam and arranged at an angle thereto, the teeth clamped by and between said bars, the hangers having their upper ends adjustably secured to the ends of the clamping-bars, and the scraper secured to the lower ends of the hangers, as set forth.

2. The combination of the beam, the clamping-bars secured to the under side of the beam and arranged at an angle thereto, the teeth clamped by and between said bars, the hangers having their upper ends provided with a vertical series of openings, the securing-bolts passed through said openings into the ends of the clamping-bars, and the scraper having a horizontal series of openings in each end, and the securing-bolts passed through said openings into the lower ends of the hangers, as set forth.

404,438. NON-INTERFERING FIRE-ALARM SIGNAL-BOX. JOHN J. RUDDICK, Richmond, Ind., assignor, by mesne assignments, to the Interstate Fire Alarm Company, Omaha, Nebr. Filed Dec. 14, 1887. Serial No. 257,858. (No model.)



Claim.—1. In a closed-circuit fire-alarm-signal system and electro-magnet in the main circuit, a short circuit around the same, and circuit-controllers in the main and short circuits, in combination with means for keeping the short circuit open whenever the main circuit is being operated by its circuit-controller, such means consisting of an armature for the said electro-magnet operating to hold a lever in position to keep the circuit-controller in the short circuit open, and an annulus provided with notches positioned with relation to the number-groups on the circuit-controller and arranged in the path of the lever, the said lever and the said number-groups forming positive elements of the combination.

2. The combination, with the number-wheel and the rim or flange carried thereby, of notches in the said rim positioned with relation to the number-groups on the wheel, and a spring-pressed arm having a pin that bears against the said rim, both the number-wheel and the arm being adapted to engage with separate circuit-controllers, and the parts being so arranged that the pin always bears against a solid portion of the rim whenever the number-wheel is in a position to operate its circuit-controller, the rim being cut away at other points, so as to afford no obstruction to the pin, as and for the purpose set forth.

3. The combination, with the number-wheel C, having the teeth *c*, of the flanged wheel D and notches *d*, &c., the magnet J, armature-lever I, spring V, post H, arm G, lever K, and pin F, and the detent engaging with the latter, and the circuit-controllers governed, respectively, by the number-wheel and the arm G, as and for the purpose set forth.

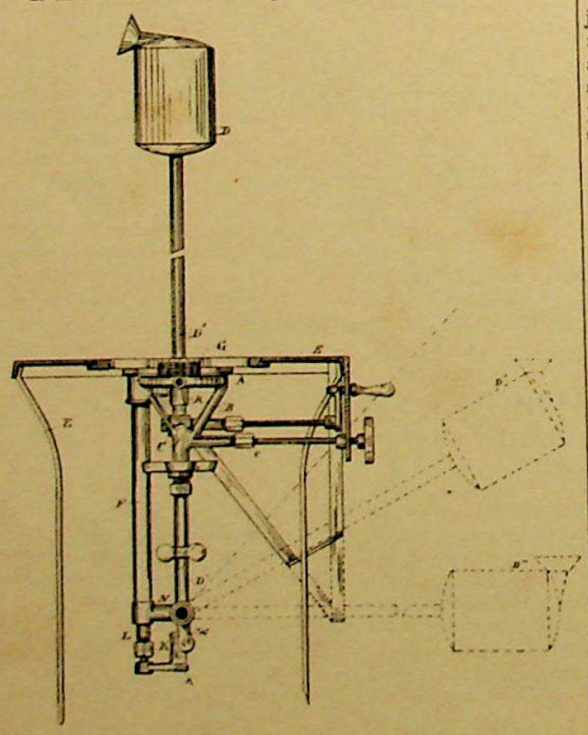
4. The combination, with the arm G and its extension G′, and the circuit-controller with which the latter engages, of the pin F and the notched traveling circular detent D′, and the spring *e*, for throwing the arm out so as to break the circuit, as and for the purpose set forth.

5. The combination, with an electro-magnet in a main circuit, a train controlled thereby, and a short circuit around the magnet and circuit-controllers in both main and short circuits, of a lever connected with the armature of the electro-magnet for holding the short circuit normally open, a distant circuit-controller in the main circuit for releasing the said lever, and a spring acting on the said lever momentarily to break the short circuit, the said spring being attached to a moving part of the train, whereby, on the opening of the circuit at a distant point, the lever will be released and afterward restored by the spring, as set forth.

404,439. SAFETY OIL-CAN ATTACHMENT FOR VAPOR-STOVES. HENRY RUPPEL, Cleveland, Ohio, assignor to the Dangler Stove and Manufacturing Company, same place. Filed Dec. 24, 1888. Serial No 294,466. (No model.)

Claim.—1. In combination with a vapor-stove, a stationary stand-pipe F, carrying the burner, a valve in said stand-pipe, a reservoir and a pivoted supply-pipe D′, leading therefrom to the stand-pipe, an arm on the supply-pipe, and an extension, as K, connected to the valve in the stand-pipe and located directly in the path of the arm on the pipe D′, substantially as described

2. In combination with a vapor-stove, a stationary stand-pipe F,



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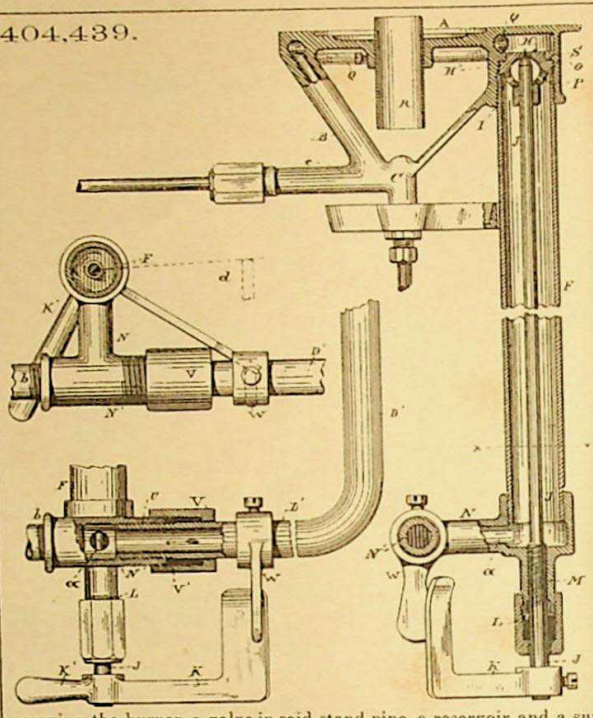


carrying the burner, a valve in said stand-pipe, a reservoir and a supply-pipe D′, leading therefrom to the stand-pipe, pivotally connected therewith, an adjustable arm W on said pipe, D′, and an extension K, adjustably connected to the valve in the stand-pipe and located in the path of the arm W, substantially as described.

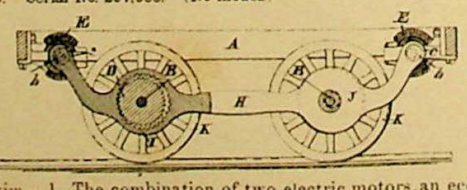
3. In combination with the burner of a vapor-stove, generating-conduits leading thereto from the stand-pipe, a valve for controlling the burner, a second valve between the stand-pipe and the valve of the burner, a reservoir, a pivoted supply-pipe D′, supporting the same, and intermediate operating devices between the pivoted supply-pipe D′ and the stand-pipe valve, substantially as described.

4. In combination with a vapor-stove, a stationary stand-pipe F, a valve within the same for controlling the passage leading to the generating-conduits, an extension K connected to said valve, a reservoir and a pivoted supply-pipe for the same, an arm W on said supply-pipe, adapted to come in contact with the extension K of the valve to automatically operate the same, and a handle connected to said valve for operating the same manually, substantially as described.

404,440. PROCESS OF PURIFYING TANNIC EXTRACTS. LUDWIG SAARBACH, New York, N.Y. Filed Dec. 12, 1888. Serial No. 293,361 (No specimens.)

Claim.—The process herein described of purifying watery tannic juices for making extracts or tannic acid, said mode consisting in first mixing the extracts with acetate of lead without the addition of any acid, separating the precipitate from the juice, and then subjecting the solution to the action of acids, preferably oxalic acid, in about the proportions herein described, thereby obtaining a further precipitate, substantially as described.

404,441. MOTIVE MECHANISM FOR RAILWAY-CARS. HENRY F. SHAW, Boston, and GEORGE F. SHAW, Dedham, Mass. Filed Jan. 26 1889. Serial No. 297,688. (No model.)

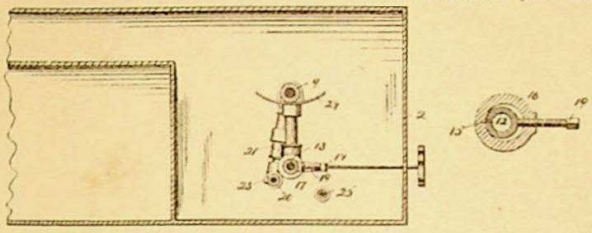


Claim.—1. The combination of two electric motors, an eccentric on each of the motor-shafts, a rod having bearings for said eccentrics, two car-axles, and two external and two internal gears, two of said gears being fixed to said rod, one of said gears being fixed on each car-axle, and each internal gear being in engagement with the corresponding external gear, substantially as and for the purpose set forth.

2. The combination of two electric motors, an eccentric on each of the motor-shafts, a rod having bearings for said eccentrics, an external gear and an internal gear in engagement with each other, one of said gears being fixed to said rod and the other gear fixed on a car-axle to revolve therewith, substantially as and for the purpose set forth.

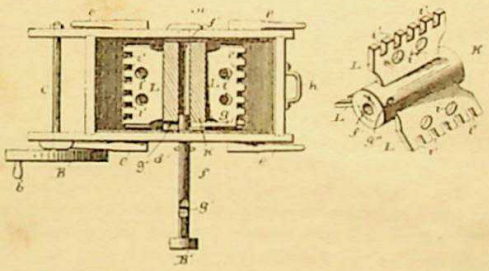
3. The combination of two electric motors, two eccentrics on each of the motor-shafts, two rods, each of which is mounted on an eccentric on each of said shafts, two gears fixed to each of said rods, two axles or shafts, each of which has fixed thereon two gears, each gear fixed to a rod being in engagement with a gear on an axle or shaft, one of any two gears in engagement with each other being an external and the other an internal gear, substantially as specified.

404,442. HYDROCARBON-BURNER. ANTHONY L. SHORE, Minneapolis, Minn. Filed Feb. 19, 1889. Serial No. 300,470. (No model.)



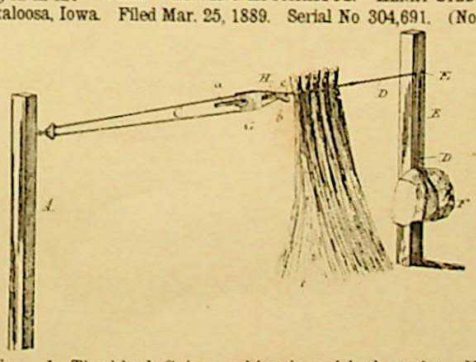
Claim.—The combination, with the retort-pipe 9, of the burner-pipe 12, extending beneath said retort-pipe, and provided upon its upper surface with the jets 13 and with the jets 15, of the rings or sleeves 16, arranged upon said pipe 12 and adapted to close said jets 15, and provided with the clamping-screws 19, substantially as described.

404,443. CHURN. HEINRICH SOMMERFELD, Canton assignor to A. Ehrlich, Lehigh, Kans. Filed Sept. 19, 1888. Serial No. 285,796. (No model.)



Claim.—The improved dasher consisting of the hub K, having the longitudinal perforation *f'* and transverse perforation *g'*, and the radially-extending paddles L, said paddles having a series of notches *i'* formed in their extreme terminal ends and a series of perforations *i* located between the notches and the hub, in combination with the perforated shaft *f* and pin *g*, substantially as shown and described.

404,444. WIRE-WEAVING APPARATUS. HENRY STEDDOM, Jr. Oskaloosa, Iowa. Filed Mar. 25, 1889. Serial No 304,691. (No model.)



Claim.—1. The block G, in combination with the twister H, movable through the block.

2. The block G, having its edges grooved to receive the wires to be twisted, in combination with the twister H, movable through the block.

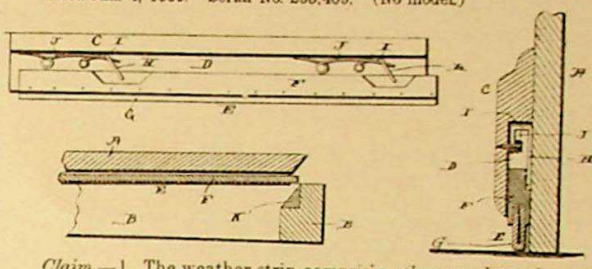
3. In combination with block G, having an orifice *e*, twister H, provided with stem *a*, cross-bar *b*, and with grooves *d d* in the cross-bar.

4. In combination with block G, having an orifie *e* and grooved on its edges, as shown, twister H, provided with an angular stem *a* to fit the orifice *e*, all substantially as shown, whereby the twister is permitted to move lengthwise through the block, but not to turn independently thereof.

5. The twister H, provided with a stem *a* and handles *c c*, in combination with a block provided with an orifice *e*, to receive the stem.

6. An apparatus for uniting wires to palings, &c., comprising a post A, having a swivel, a post B, provided with a tension device, a block G, adapted to be inserted between the separated strands, and a T-shaped twister movable lengthwise through the block.

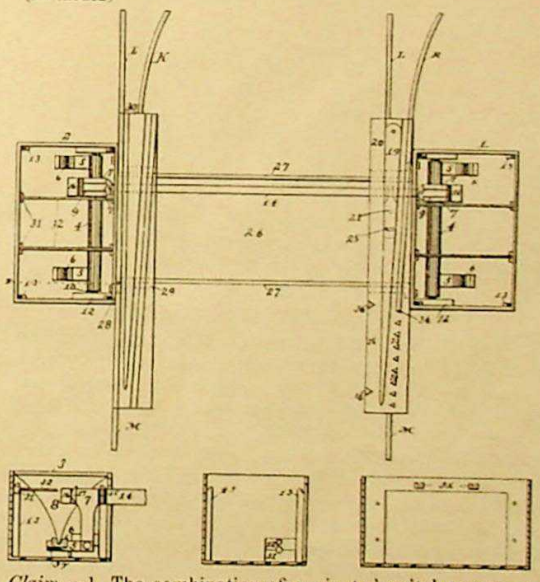
404,445. WEATHER-STRIP. ANDREW M. STODARD, Eureka, Kans. Filed Jan. 4, 1889. Serial No. 295,409. (No model.)



Claim.—1. The weather-strip comprising the cap-plate, the strip E, arranged between said cap-plate and the door, the hangers having their opposite ends pivoted, respectively, to the cap-plate and the strip E, and the springs secured to the cap-plate and having their free ends bearing on the hangers, as set forth.

2. The weather-strip comprising the cap-plate having a recess in its rear side, the strip arranged in said recess, hangers supporting said strip within the recess and provided with transverse shoulders, and the springs secured within the recess and having their ends bearing against the shoulders of the hangers, as set forth.

404,446. MECHANISM FOR OPERATING SWITCH-POINTS. JAMES M. SWEM, Denver, Colo. Filed Oct. 5, 1888. Serial No. 287,301. (No model.)



Claim.—1. The combination of a pivoted switch-tongue, a connecting-bar, a lever connecting such bar with the switch-tongue, and two sets of mechanisms, one at either end of the connecting-bar and each consisting of a rocking lever having an upwardly-projecting arm connected to the connecting-bar, arms projecting outwardly at an angle to such upward arm and each carrying a cup-bearing, and a platform having legs taking in such cup-bearings, substantially as set forth.

2. The combination of the boxes 1 2, each provided with a top 3, having inwardly-projecting arms 8, shaft 4, with arms 7 and 5, the bar 14, connected to the arm 7 of each box, the convex-faced washers 17, the lever 22, and switch-point 19, substantially as set forth.

3. The combination, with the pivoted switch-point, the lever 22, and the bar 14, of the following instrumentalities located at either end of the bar and in suitable boxes thereat, to wit: the rock-shaft 4, with arms 7 and 5, the cup-bearings 6, detachably secured upon the arms 5, and the table or platform 3, having arms 8 taking at their ends in the cup-bearings, substantially as set forth.

4. The combination of a box having lugs 31 secured or formed upon its interior, cross-brace rods 32, seated therein, a vertically-moving platform-top seated in the upper part of the box, and a switch mechanism actuated thereby and located within the box, substantially as set forth.

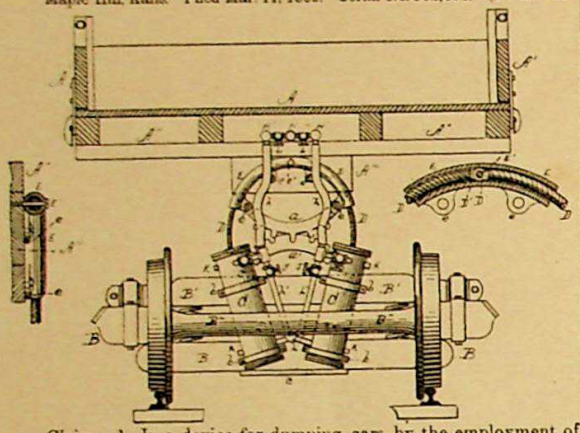
5. The combination of the boxes 1 2, each provided with a top having inwardly-projecting arms 8, shaft 4, with arms 5 and 7, the bar 14, connected to the arm 7 of each box, the lever 22, switch-point 19, pivoted on the frog-plate, having stops or lugs 36 on its inner edge, and the single rail on its outer edge formed with openings or apertures 33 through its body, substantially as set forth.

6. The combination, with the boxes 1 2, of the transverse box 26, having sides 27, formed with the flanges 28 29, substantially as set forth.

7. The combination of the shaft 4, having arms 5 and 7, the bear-

ings 6 on the arms 5, the top 3, having arms 8 taking in such bearings, and the bearing-boxes for the shaft 4, each bearing-box having one half 11 formed with the inclosing-box and one half 12 secured thereto, and the inclosing-box, substantially as set forth.

404,447. CAR-DUMPING APPARATUS. ALBERT F. THAYER, Maple Hill, Kans. Filed Mar. 11, 1889. Serial No. 302,861. (No model.)



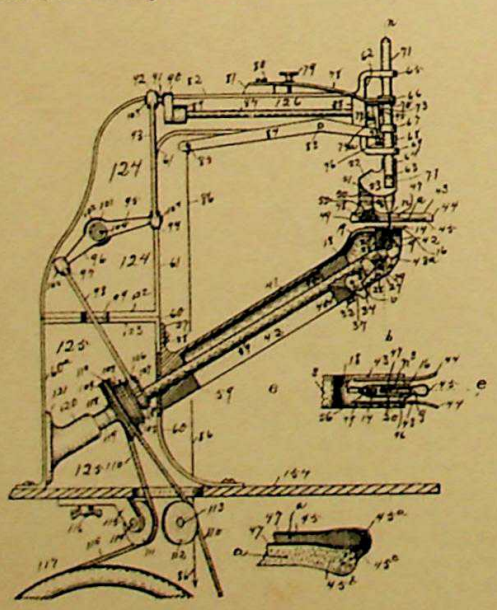
Claim.—1. In a device for dumping cars by the employment of steam, compressed air, or analogous power, the combination, with the car-body, truck, cylinders, and pistons, of the flexible piston-rods D, constructed and arranged substantially as above set forth.

2. In a device for dumping cars by the employment of steam, compressed air, or analogous power, the combination of the truck, the pair of cylinders C C, provided with pistons C′, the flexible piston-rods D, having their outer ends connected together, as shown, and the car-body and curved tubular frame E, arranged and constructed to operate substantially as described.

3. The combination of the car-truck, the cylinders C, supported thereby, pistons C′, flexible piston-rods D, provided with the looped ends D′, the tubular frame E, supported by the car, bolt E′, pipes or tubes *h*′ H′ H, flexible tubes *h*, cocks and cut-offs J L, and car and rockers, substantially as and for the purpose described.

404,448. SHOE-SEWING MACHINE. JOSEPH L. TREHARN, Cincinnati, Ohio, assignor of two-thirds to Joseph S. Blacker and Gustave Gerstle, both of same place. Filed May 9, 1887. Renewed Apr. 19, 1889. Serial No. 307,886. (No model.)

Claim.—1. In a shoe-sewing machine, the combination of a supporting and guiding projecting frame part, as a projecting horn or post, upon and over which the work is guided, a stitch-forming mechanism operating-shaft extending at an angle to the line of needle motion and backward under the bracket supporting the needle-bar and inclined downward from the stitch-forming point, a reciprocating needle-bar supported and guided by suitable framing, the eccentric 106 107 on the inclined driving-shaft, rod 98, bell-crank 95 96, rod 93, and rock-shaft 87, housed approximately in line with the needle-bar bracket 126 and suitably connected with and operating the needle-bar and needle in conjunction with the stitch mechanism operated by the said inclined shaft, substantially as set forth.



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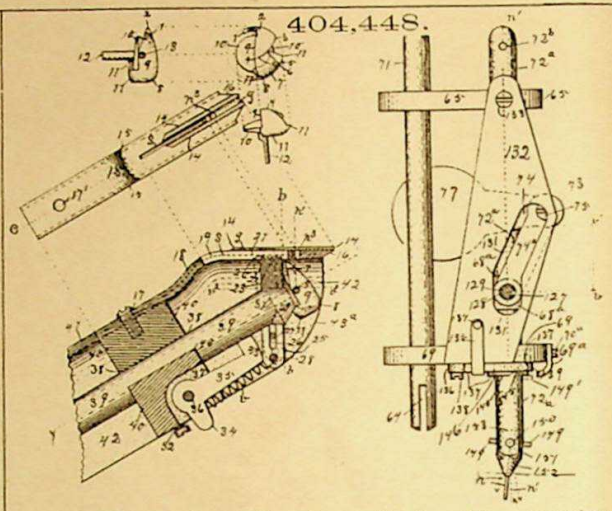


2. In a shoe-sewing machine, the combination of the supporting and guiding projecting frame part, horn or post described, upon and over which the work is guided, a presser-foot having a forwardly-extending cord-guiding device with a recess or space in which the button-hole cord is guided, and suitable stitch-forming mechanism having a needle working through the top of the said projecting frame part, substantially as set forth.

3. In a shoe-sewing machine, the combination of a supporting and guiding projecting frame part, as a projecting horn or post, upon and over which the work is guided, a presser-foot having forwardly-extending rigid cord-guides between which the button-hole cord is guided, and suitable stitch-forming mechanism having a needle working through the top of the said projecting frame part, the said guide as being connected in front and having an end gap, as 45ᵉ, in front on the under side, substantially as set forth.

4. In a shoe-sewing machine, the combination of a supporting and guiding projecting frame part, as a projecting horn or post, upon and over which the work is guided, a presser-foot having a forwardly-extending cord-guiding device provided with a recess or space between its sides, a gap at its extremity, as 45ᵉ, for guiding the cord, and adjacent downwardly and outwardly flared or projecting parts, as 45ᵇ, and suitable stitch-forming mechanism having a needle working through the top of the said projecting frame part, substantially as set forth.

5. In a shoe-sewing machine having a supporting and guiding projecting frame part, as a projecting horn or post, upon and over which the work is guided, and in combination with the needle-plate and stitch-forming mechanism thereof, the presser-foot having the upright central portion 56, and the button-hole-fly guides 43, attached to the upright portion of the presser-foot, one on either side thereof, and having their guiding-surfaces extending near to and parallel with the presser-foot, whereby spaces *i z* are provided between the fly-guides and the upright portion of the presser-foot for the passage of the button-hole flies, substantially as set forth.

6. In a shoe-sewing machine, the combination of a supporting and guiding projecting frame part, as a projecting horn or post, upon and over which the work is guided, a presser-foot having a recessed button-hole-cord guide, detachable button-hole-fly guides having guiding-surfaces extending in proximity to the presser-foot and being attached to the presser-foot part above the space provided for the passage of the button-hole fly, and suitable stitch-forming mechanism having a needle working through the top of the said projecting frame part, substantially as set forth.

7. In a shoe-sewing machine, the combination of a supporting and guiding projecting frame part, as a projecting horn or post, upon and over which the work is guided, a stitch-forming mechanism driving-shaft housed within the said projecting frame part, a cam on the said shaft for lifting the feed device, another cam on the shaft for giving the said device a feed-stroke, a feed device having a slot or opening penetrated by the said shaft and guided by the parts around the said slot or opening and upon the shaft, a spring for replacing the feed device and a presser-foot opposing and acting with the feed device, substantially as set forth.

8. In a shoe-sewing machine, the combination of a supporting and guiding projecting frame part, as a projecting horn or post, upon and over which the work is guided, a stitch-forming mechanism driving-shaft housed within the said projecting frame part, a cam on the said shaft for lifting the feed device, another cam on the shaft for giving the said device a feed-stroke, a feed device having a slot or opening penetrated by the said shaft and guided by its slotted part upon the latter, a spring for replacing the feed device, pivot-bearings for the

body of the feed device, providing means for both the upward and backward movement induced by the said cams and spring, and a presser-foot opposing and acting with the feed device, substantially as set forth.

9. In a shoe-sewing machine, the combination of a supporting and guiding projecting frame part, as a projecting horn or post, upon and over which the work is guided, a stitch-forming mechanism driving-shaft housed within the said projecting frame part, a cam on the said shaft for lifting the feed device, another cam on the shaft for giving the said device a feed-stroke, a feed device having a slot or opening penetrated by the said shaft and guided by its slotted part upon the latter, pivot-bearings for the body of the feed device, and a spring connected to the feed device and some stationary part, as the said framing, and acting to turn the feed device about its pivot-bearings, and a presser-foot opposing and acting with the feed device, substantially as set forth.

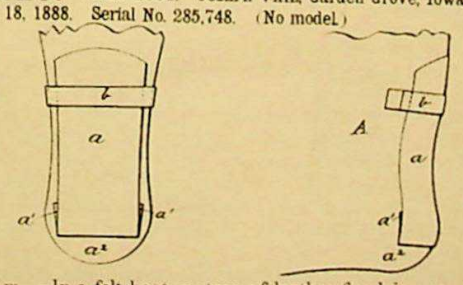
10. In a shoe-sewing machine, the combination of a supporting and guiding projecting frame part, as a projecting horn or post, upon and over which the work is guided, a stitch-forming mechanism driving-shaft housed within the said projecting frame part, a cam on the said shaft for lifting the feed device, another cam on the shaft for giving the said device a feed-stroke, a feed device having a slot or opening penetrated by the said shaft and guided by its slotted part upon the latter, pivot-bearings for the body of the feed device, a spring connected to the feed device and some stationary part, as the said framing, and acting to turn the feed device about its pivot-bearings, a feed-regulator arranged adjustable between its support and the feed-device pivot, and a presser-foot opposing and acting with the feed device, substantially as set forth.

11. In a shoe-sewing machine, the combination of a supporting and guiding projecting frame part, as a projecting horn or post, upon and over which the work is guided, a device, as a presser-foot, for holding the work, a reciprocating needle-bar having a needle-carrying extension pivoted thereto within its vertical axis, and a device operated by the needle-bar and arranged to strike or engage parts of the needle-carrying extension, whereby the extension is vibrated from side to side and caused to enter the fabric at an angle to the said needle-bar, substantially as set forth.

12. In a shoe-sewing machine, the combination of a supporting and guiding projecting frame part, as a projecting horn or post, upon and over which the work is guided, a device, as a presser-foot, for holding the work, a reciprocating needle-bar having a needle-carrying extension pivoted thereto within its vertical axis, which extension has projecting parts, as pins, and a device operated by the needle-bar and arranged to engage the said projecting parts alternately, whereby the extension is vibrated from side to side and caused to enter the fabric at an angle to the said needle-bar, substantially as set forth.

13. In a shoe-sewing machine, the combination of a supporting and guiding projecting frame part, as a projecting horn or post, upon and over which the work is guided, the sewing-needle bar having a needle-carrying extension pivoted at its end and provided with projecting side parts, the ratchet-wheel 146, through which the needle-bar works, and having a rim 154, provided with raised and depressed portions, as 140 and 145, and suitably retained in place, as described, a pawl operating said wheel and moved by a swinging arm operated by suitable connection with the needle-driving mechanism, the ratchet mechanism being arranged to alternately throw the needle from one side to the other, and the said swing-arm, substantially as set forth.

404,449. FELT BOOT. JOSEPH VAIL, Garden Grove, Iowa. Filed Sept. 18, 1888. Serial No. 285,748. (No model.)



Claim.—In a felt boot, a strap of leather fixed in any suitable manner to the heel of said boot, and at its upper end held in position by a loop formed by a piece of elastic attached to said boot, facilitating the taking on or off of the aforesaid felt boot.

404,450. AUTOMATIC TICKET-SELLING MACHINE. JOHN W. VAUGHN, Jersey City, N. J. Filed July 7, 1888. Serial No. 279,328. (No model.)

Claim.—1. A delivery-chute for automatic selling-machines, consisting, essentially, of a casing and a pivoted trap mounted therein and formed with a forwardly-extending projection 76, as and for the purpose stated.

2. In an automatic selling-machine, the combination, with a weightway and a weight-releasing mechanism, substantially as described, of a reel, feeding-rollers mounted in advance of the reel, a tripping-lever provided with a toe which enters the weightway, and connections, substantially as described, between said lever and one of the feeding-rollers, as and for the purpose stated.

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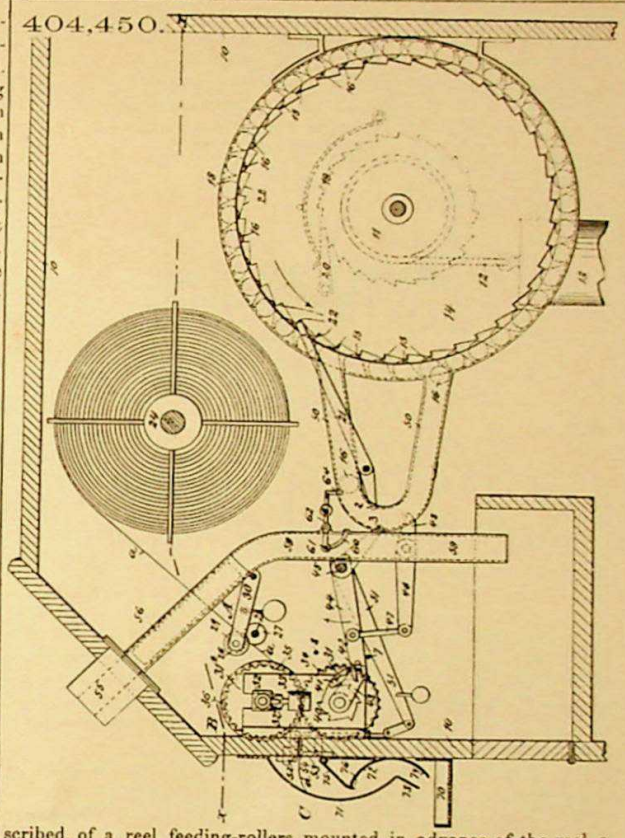
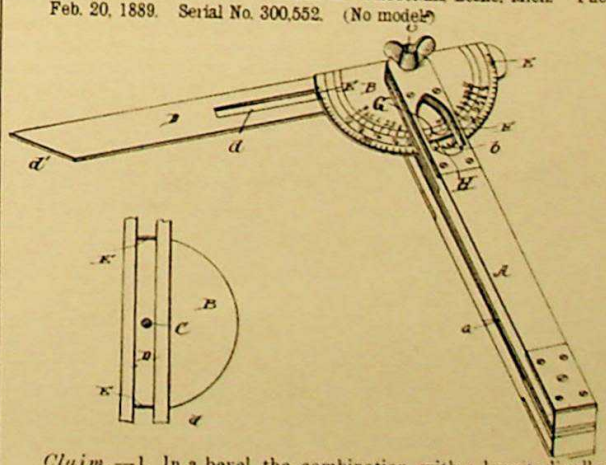


3. In an automatic selling-machine, the combination, with a weightway and a weight-releasing mechanism, substantially as described, of a reel, feeding-rollers mounted in connection therewith, web-severing shear-blades, tripping-levers provided with toes which enter the weightway, and connections between one of the levers and one of the feeding-rollers and between the other lever and one of the shear-blades, substantially as described.

4. The combination, with a motor, of a coin-chute, a locking-lever for said motor, which lever can be operated by a coin passing through the coin-chute, a reel, a pair of feed-rollers operated by the motor, and a ticket-severing device, substantially as set forth, and also operated by the motor, substantially as herein shown and described.

404,451. BEVEL. GEORGE H. WAGGONER, Leslie, Mich. Filed Feb. 20, 1889. Serial No. 300,552. (No model.)

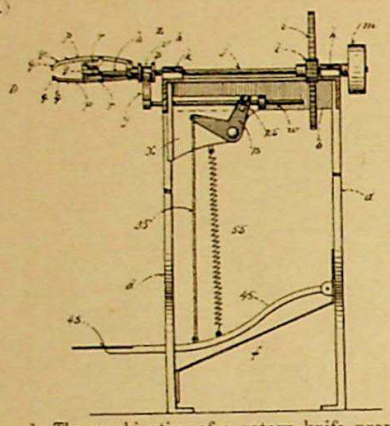


Claim.—1. In a bevel, the combination, with a longitudinally slotted stock, of the sector mounted in one end of the slot and the slotted blade sliding on up-struck projections on the sector and adapted to fold within the slot of the stock, substantially as specified.

2. In a bevel, the combination, with a longitudinally-slotted stock provided with a beveled opening and the indices arranged in the said opening, of the sector B, mounted on an adjusting-bolt near one end of the slot of the stock and provided with graduations suitably inscribed, which travel under the said indices, and the slotted blade sliding on projections on the sector, substantially as specified.

3. In a bevel, the combination, with the longitudinally-slotted stock provided with a beveled opening and the indices G and H, arranged in said opening, of the sector B, pivoted in the free end of said slot and provided with two series of graduations, one marking the degrees of a circle and the other marking roof and other timber angles, and the blade D, carried by said sector, substantially as specified.

404,452. MACHINE FOR PARING SQUASHES. Fred L. Webster, Danvers, Mass. Filed Nov. 3, 1888. Serial No. 289,926. (No model.)



Claim.—1. The combination of a rotary knife provided with a pulley and a supporting-rod, an adjustable bracket adapted to be secured to the wall of a room, a tube swiveled in said bracket and adapted to receive said supporting-rod, a main driving-shaft bearing a pulley, and a belt connecting the pulleys on said knife and shaft, substantially as described.

2. The combination of the knife H, provided with the guard 54 and pulley 44, the supporting-rods 74 and 84, the tube 33, swiveled to a stationary object and adapted to receive the rod 84, and adjunctive mechanism for actuating said knife, substantially as set forth.

3. The combination of a body or frame, a rotating shaft journaled in said frame, an expansible holder secured to said shaft and provided with retaining-points, a sliding rod in said frame bearing an arm in engagement with said holder, a bell-crank lever for actuating said rod, a treadle pivoted in said frame and connected by a rod with said lever, and a spring connecting said treadle and frame, whereby said holder may be opened as the treadle is depressed and closed as said treadle is released, substantially as described.

4. The combination of the body A, provided with the shaft *h*, the holder D, secured to said shaft and provided with the sliding sleeve *v*, having flanges *z*, the sliding rod *w*, provided with the forked arm *y*, engaging said sleeve between said flanges, the bell-crank lever 15, for actuating said rod, the treadle 45, connected with said lever by the rod 35, and the spring 55, connecting said treadle and body, substantially as and for the purpose set forth.

5. In a machine of the character described, the combination of a body provided with a rotating shaft, an expansible holder disposed on said shaft, treadle mechanism provided with a spring, whereby said holder may be opened as the treadle is depressed and closed as it is released, a rotary knife provided with a pulley and a supporting-rod, a tube swiveled to a stationary object in which said rod is adjustably secured, and adjunctive mechanism for conjointly actuating said shaft and knife, all being arranged to operate substantially as specified.

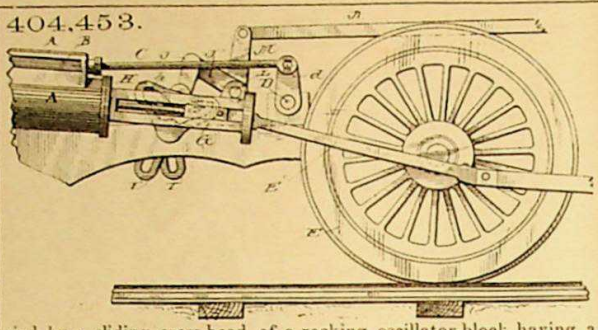
6. The rotary knife H, comprising the frame 24, blades 14, and guards 34, secured to a shaft journaled in said frame, the guard 54, and handle 64, in combination with the supporting-rods 74 and 84, the tube 33, adapted to receive the rod 84 and swiveled in the block 23, secured to the adjustable bracket 13, and adjunctive mechanism for actuating said knife, substantially as set forth.

7. In a device of the character described, the combination of the body A, provided with the shafts *h j*, the expansible holder D, secured to the shaft *h* and provided with the sleeve *v*, fitted to slide on said shaft, treadle mechanism in said body for moving said sleeve, whereby the holder may be opened and closed, the rotary knife H, adjustably secured in the swiveled tube 33, and a main driving-shaft belted to said knife and the shaft *j*, whereby said holder and knife may be rotated conjointly, substantially as and for the purpose specified.

404,453. VALVE-GEAR. Michael I. Welch, Valdosta, assignor of one-half to John Joseph McDonough, Savannah, Ga. Filed Mar. 16, 1889. Serial No. 303,522. (No model.)

Claim.—1. In a valve-gear, the combination, with a projection upon the cross-heads, of a rocking oscillator-block having a groove in which the projection works, and a reverse-link connected at its center to the rock-shaft of the block, as set forth.

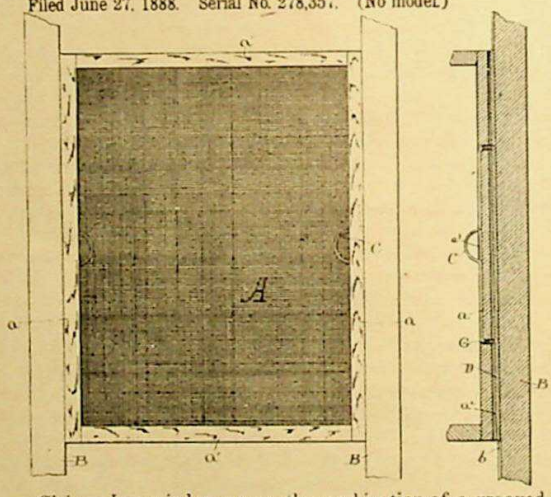
2. In a valve-gear, the combination, with a pin or projection carried by a sliding cross-head, of a rocking oscillator-block having a groove of approximately the shape of a figure 8, in which the pin or projection moves, a reverse-link, and a link-pin adjustable on the slot in said link, as set forth.



3. In a valve-gear, the combination, with a pin or projection upon a sliding cross-head, said pin being vertically adjustable, of a rocking oscillator-block having a groove, as described, in which the pin or projection works, and a link operated by the block, as set forth.

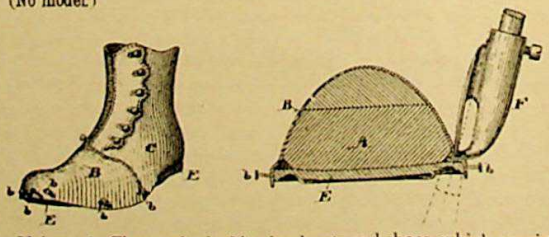
4. In a valve-gear, the combination of the cross-head, a cheek F' carried thereby, a vertical slot in said cheek, a pin *f* carried therein, and a set-screw F*, for adjusting the height of the pin, with a rocking oscillator-block having a groove in which the pin works, and a link carried and operated by the block, as set forth.

404,454. WINDOW-SCREEN. John S. White, Portland, Me. Filed June 27, 1888. Serial No. 278,357. (No model.)



Claim.—In a window-screen, the combination of a grooved side bar, a tongue fitting said groove, a rod or wire having its ends bent at right angles to pass through said side bar and to enter said strip, coiled spring surrounding said ends for forcing said strip outward, said rod having formed in its central portion a loop or handle, whereby said strip may be retracted, substantially as shown.

404,455. METHOD OF LASTING BOOTS AND SHOES. Don F. Willis, Lynn, Mass., assignor of one-half to James M. Griffin and John S. Griffin, both of same place. Filed Feb. 8, 1889. Serial No. 299,201. (No model.)

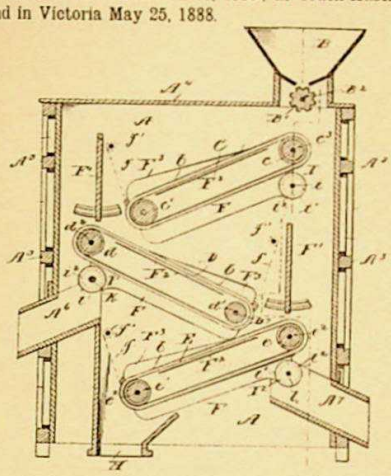


Claim.—1. The method of lasting boots and shoes, which consists in securing the heel portion of the inner sole to the last, placing the last within the upper, securing the fore part of the upper to the instep of the last, turning the edge of the heel portion of the upper over upon and securing it to the inner sole, placing the outer sole upon the turned-over heel portion of the upper, the inner sole, and the last, and securing it thereto, leaving the edge of the fore part of the upper free or unconfined by said sole, and then drawing the unconfined edge of the upper down over the edge of the outer sole and securing it to the outer edge of said sole.

2. The method of lasting boots and shoes which consists in partially straining the upper over the last in the act of assembling the parts preparatory to stitching the sole to the upper, securing the edge

of the upper to the edge of the outer sole, and then completing the straining of the upper by the act of stitching the upper to the sole.

404,456. GRAIN-CLEANING MACHINE. JAMES F. WILSON, Orange, assignor to Thomas William Carr, Marrickville, New South Wales. Filed Oct. 13, 1888. Serial No. 288,287. (No model.) Patented in New South Wales Oct. 26, 1886; in South Australia Mar. 28, 1888, and in Victoria May 25, 1888.



Claim.—1. In a grain-cleaning machine, the combination of a plurality of inclined overlapping and upwardly-traveling endless aprons composed of a long-napped fabric and arranged to successively deliver the material from one to the other at a point proximate to the greatest elevation of the aprons, a feeding device adapted to feed the material to the upper apron of the series at the point of greatest elevation thereof, a discharge-chute adapted to deliver the material at the point of least elevation of the last or lowermost of the series of aprons, a beater for each apron arranged below the same in proximity to the point of greatest elevation of the aprons, adjustable diverting-boards F, arranged and operating to arrest rebounding sound grain as it passes down the aprons and to divert the impurities carried over the aprons and beaten therefrom into a separate delivery-chute, substantially as and for the purpose specified.

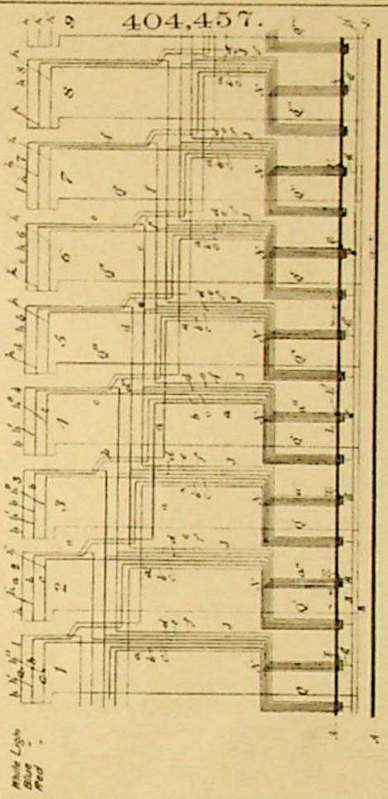
2. In a grain-cleaning machine, the combination, substantially as herein described, of a plurality of overlapping frames inclined alternately in reverse directions, said frames having side flanges increasing in height from a point near the greatest elevation of the frames to the point of least elevation, a roller-shaft mounted at each end of said frames, the upper shaft constituting the pivot for the frame, an adjustable hanger for the lower roller-shaft, an endless apron composed of a long-napped textile fabric supported from rollers on said shafts, mechanism, such as described, to cause said aprons to move in an upward direction, a whip for each apron arranged below the same in proximity to the point of its greatest elevation, and adjustable diverting-boards F, arranged and operating relatively to the aprons, substantially as and for the purpose specified.

404,457. RAILWAY-SIGNAL. A. JACKSON WISNER, Philadelphia, Pa. Filed Jan. 24, 1888. Serial No. 261,709. (No model.)

Claim.—1. In a system of electric signals for railroads, the combination, with rail A, of rod C, set parallel with and closely to the inner side of the rail, positive and negative contact-springs D D′, connected with wires leading, respectively, to positive and negative mains B B′, the wires from the positive main, with signals connected therewith in the line of their traverse, and negative connecting-wires *g*, so arranged that the pressure of the wheel-flanges of the train will depress rod C and effect electrical circuit, substantially as described.

2. In a system of electric signals for railroads, the combination, with rail A, of rod C, set parallel with and closely to the side of the rail, positive and negative contact-springs D D′, connected with wires leading, respectively, to positive and negative mains B B′, the wires from the positive main, with signals connected therewith in the line of their traverse, and negative connecting-wires *g*, so arranged that the pressure of the wheels of the train will depress rod C and effect electrical circuit, substantially as described.

3. In a system of electric signals for railroads, the combination, with the rail A, of spring-rod C, set parallel with and closely to the side of the rail, positive and negative contact-springs D D′, connected with wires leading, respectively, to positive and negative mains B B′, or wires from the positive main traversing back along the road, with a signal or signals in its or their traverse, one or more of said wires traversing back along the line of road and one or more of them traversing forward along the line, with signals set upon said wires in the lines of their traverse, and negative wires from contact-springs D′,



all operating, substantially as described, to throw signals simultaneously ahead of and behind the train.

4. In a system of electric signals, the combination, with rail A, of rod C, set parallel with and closely to the side of the rail, and positive and negative contact-springs D D′, set at intervals along the line of the rail and connected with wires leading, respectively, to the positive and negative mains B B′, the wires from the positive main being provided with signals in the line of their traverse and arranged in blocks substantially as shown, whereby, as the train progresses and circuit is broken with one block behind, circuit is made or closed with an additional block farther ahead, continuous successive blocks of signals being thus operated as the rear signals cease to operate, substantially as described.

5. In a system of electric signals for railroads, the combination, with rail A, of rod C, set parallel with and closely to the rail, plate C‴, with insulator D″, springs C′, to sustain rod C, contact-spring D D′, connected with wires leading, respectively, to positive and negative mains B B′, signal-lamps set on the line of and operated by the positive wires when circuit is closed by the depression of rod C, and negative wire *g*, rod C being adapted to be depressed by the wheels of the train, substantially as described.

6. In a system of electric signals for railroads, the combination, with rail A, of rod C, set parallel with the rail, positive and negative contact-springs D D′, connected with wires leading, respectively, to positive and negative mains B B′, the wires from one of the mains having signals connected therewith in the line of their traverse, negative connecting-wires *g*, and a wheel or roller attached to one or more of the vehicles of the train to depress said rod and close circuit, substantially as described.

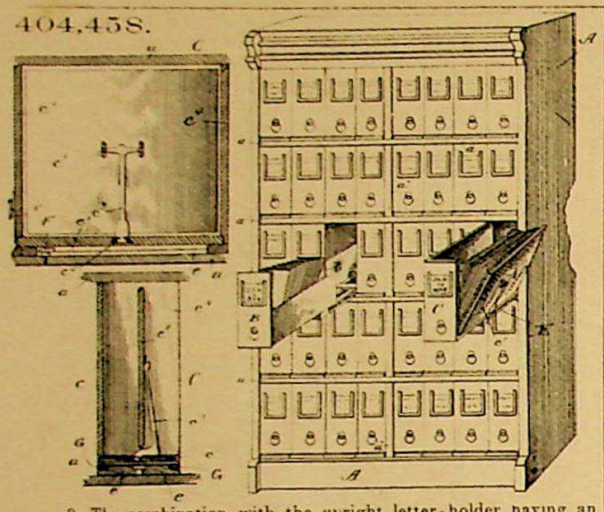
7. In a system of electric signals for railroads, the combination, with rail A, of rod C, set parallel with the rail, positive and negative contact-springs D D′, connected with wires leading, respectively, to positive and negative mains B B′, the wires from the positive main having signals connected therewith in the line of their traverse, negative connecting-wires *g*, and a depressor attached to the train and adapted to bear upon rod C to close circuit, substantially as described.

404,458. DOCUMENT OR LETTER FILE. EDMUND W. WOODRUFF, Washington, D. C. Filed Mar. 11, 1889. Serial No. 302,787. (No model.)

Claim.—1. The combination, with the upright letter-holder having an open side, of the lateral file-board or follower operating in planes parallel with the front of the case, substantially as set forth.

2. The combination, with the upright letter-holder having the open side, of the lateral file-board or follower operating in planes parallel with the front of the case, and a card or leaf index arranged within said holder with its leaves parallel with the sides of the holder and its marked or indicating edge situated at the top of said holder, substantially as set forth.

404,458.



3. The combination, with the upright letter-holder having an open side, of the lateral file-board or follower operating in planes parallel with the front of the case, and a support engaging said follower and adapted to support the same in an inclined position at the side of said holder, substantially as set forth.

4. The combination, with the upright letter-holder having an open side, of the lateral file-board or follower operating in planes parallel with the front of the case, a support engaging said follower and adapted to support the same in an inclined position at the side of said holder, and a slide situated beneath the holder and adapt to sustain the same when drawn out, substantially as set forth.

5. The combination, with the cabinet or case A, of the document and letter holders of uniform appearance, said document-holder being provided with a file-board or follower operating in planes at right angles to the front of the holder, and the upright letter-holder having an open side and a lateral follower operating in planes parallel with the front of the holder, substantially as set forth.

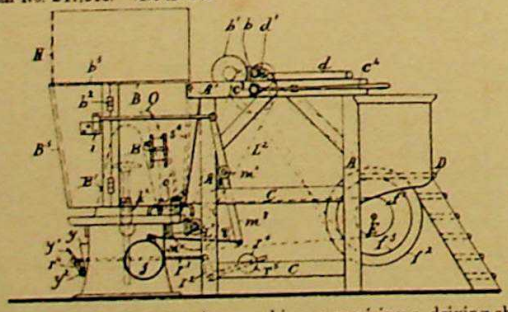
6. As a means for filing papers, the combination, with the cabinet or case A, of the document-holder provided with a file-board or follower operating in planes at right angles to the front of the holder, and the upright letter-holder having an open side and provided with a lateral follower operating in planes parallel with the front of the holder, said holders being interchangeable, substantially as set forth.

7. The combination, with the case or cabinet, of a slide engaging the same and provided with a longitudinal slot or space, and having a lateral recess e^7 at the rear end of the slot or space, whereby it is adapted to receive and sustain, when drawn out, either the document or letter holder, substantially as set forth.

8. The combination, with the case or cabinet having a shelf *a* and the holders, of the slides E, arranged contiguously to and adapted to keep each other in place on said shelf, and retaining devices which hold said slides to the shelf, but permit their reciprocation, substantially as set forth.

9. The combination, with the shelf *a*, of the slide E, having a longitudinal space with a lateral recess e^7, retaining devices which hold said slide to the shelf, but permit its reciprocation, and the holder provided with a stop which fits said space, and a lateral arm *g*, adapted to engage the under side of the slide, substantially as set forth.

404,459. HAT-FORMING MACHINE. GEORGE YULE, Newark, N. J., assignor to Carrie G. Yule, same place. Filed Aug. 25, 1887. Serial No. 247,810. (No model.)



Claim.—1. A hat-forming machine comprising a driving-shaft and a casing inclosing a perforated hat-forming cone, doors upon the said casing, and a cam operated by the driving-shaft and connected to the doors, as and for the purpose set forth.

2. A hat-forming machine comprising a driving-shaft and a casing inclosing a perforated hat-forming cone, a spray-discharger located within the casing adjacent to the cone, a water pipe and cock to supply water to the spray-discharger, a cam operated by the driving-shaft, and suitable connections between the cam and the cock to open the cock automatically, as and for the purpose set forth.

3. A fur-forming machine having a casing inclosing the perforated cone, a spray-discharger located within the casing adjacent to the cone, a water pipe and cock to supply water to the spray-discharger, an air-inlet in the vacuum-chamber beneath the turn-table, a driving-shaft, and a cam operated by the driving-shaft and connected with the air inlet, as and for the purpose set forth.

4. A fur-forming machine having a casing inclosing the perforated cone, a spray-discharger located within the casing adjacent to the cone, a water pipe and cock to supply water to the spray-discharger, an air-inlet in the vacuum-chamber beneath the turn-table, an air-check vertically movable within the cone, a driving-shaft, and a cam operated by the driving-shaft and connected with the air-check, as and for the purpose set forth.

5. A fur-forming machine comprising a turn-table, a casing inclosing the same, a feeding-apron, pickers, brush for supplying fur to the cone, and a clutching mechanism connecting the feeding-apron with the driving-shaft and operated to disconnect the apron at intervals corresponding with the feeding of one bat, as and for the purpose set forth.

6. A fur-forming machine comprising the driving shaft, a casing inclosing the perforated cone, a spray-discharger located within the casing adjacent to the cone, a water pipe and cock to supply water to the spray-discharger, and a cam operated by the driving-shaft and connections to the cock and connections to the doors of the casing, the whole arranged and operated substantially as set forth.

7. A fur-forming machine comprising a driving-shaft, a casing inclosing the perforated cone, a spray-discharger located within the casing and adjacent to the cone, a water pipe and cock to supply water to the spray-discharger, an air-inlet in the vacuum-chamber beneath the turn-table, and a cam operated by the driving-shaft and connections to the water-cock of the spray-discharger and to the doors of the casing, the whole arranged and operated substantially as set forth.

8. A fur-forming machine comprising a driving-shaft, a casing inclosing the perforated cone, a spray-discharger located within the casing adjacent to the cone, a water pipe and cock to supply water to the spray-discharger, an air-inlet in the vacuum-chamber beneath the turn-table, an air-check vertically movable within the cone, and a cam operated by the driving-shaft and connections to the water-cock of the spray-discharger, to the air-inlet, to the air-check, and to the doors of the casing, the whole arranged and operated substantially as set forth.

9. A fur-forming machine comprising a driving-shaft, a casing inclosing the perforated cone, a spray-discharger located within the casing adjacent to the cone, a water pipe and cock to supply water to the spray-discharger, an air-inlet in the vacuum-chamber beneath the turn-table, an air-check vertically movable within the cone, a clutching mechanism connecting the feeding-apron with the driving-shaft, and a cam operated by the driving-shaft and connections to the water-cock of the spray-discharger, to the air-inlet, to the air-check, to the said clutching mechanism, and to the doors of the casing, the whole arranged and operated substantially as set forth.

10. A fur-forming machine having a turn-table and a casing inclosing the same, hinged doors in the casing, and a removable annular shield applied to the top of the casing above the doors, as and for the purpose set forth.

11. A fur-forming machine having a turn-table and a casing inclosing the same, hinged doors in the casing, a cam operated by the driving-shaft of the machine, a lever actuated by the cam for moving the doors, and a spring-connection between the lever and the doors for closing the doors elastically, as and for the purpose set forth.

12. A fur-forming machine provided with a rotary turn-table, a casing, and a spray-discharger within the casing, and having sundry movable attachments, (as the hinged doors upon the casing, the air-check, and a pipe and cock for supplying water to the spray-discharger,) and a driving-shaft to actuate the fur-forming cone, cams operated by the driving-shaft, with connections to automatically actuate such attachments, and a clutch for disconnecting the cams from the driving-shaft, as and for the purpose set forth.

13. A fur-forming machine having a turn-table, a casing inclosing the same, and a vertical draft-aperture in the casing provided with two sliding plates adapted to form an opening variable in height from the bottom of the casing, as and for the purpose set forth.

14. A fur-forming machine having a turn-table, a vacuum-chamber sustaining the same and provided with an air-inlet in the side above the bottom of the chamber, and a suction-blower at the side of the vacuum-chamber and connected with such inlet, as and for the purpose set forth.

15. A fur-forming machine having a turn-table, a vacuum-chamber sustaining the same and provided with an air-inlet in the side

above the bottom and a water-pan in the bottom of the chamber, a spray-discharger adjacent to the turn-table, and a suction-blower at the side of the vacuum-chamber, as and for the purpose set forth.

16. In a fur-forming machine, the combination, with the turn-table and a vacuum-chamber sustaining the same, of a spray-discharger sustained adjacent to the turn-table and a water-trough beneath the margin of the turn-table, as and for the purpose set forth.

17. In a fur-forming machine, the combination, with the turn-table and a vacuum-chamber sustaining the same, of a casing inclosing the turn-table, a spray-discharger within the casing, and a water-trough beneath the margin of the turn-table, as and for the purpose set forth.

18. A fur-forming machine comprising a turn-table and a vacuum-chamber sustaining the same, a spray-discharger sustained adjacent to the turn-table, a water pipe and cock to supply water to the spray-discharger, and a cam operated by the driving-shaft of the machine and connections to the water-cock, as and for the purpose set forth.

19. In a fur-forming machine, the combination, with the turn-table, of a vacuum-chamber having a circular seat upon its top, a collar upon the turn-table fitted to such seat, an annular water-trough fitted to such top beneath the rim of the turn-table, and a casing inclosing the turn-table and sustained by the water-trough, as and for the purpose set forth.

20. In a fur-forming machine, the combination, with the turn-table, of a vacuum-chamber having a circular seat upon its top, a collar upon the turn-table fitted to such seat, an annular water-trough fitted to such top beneath the rim of the turn-table, and anti-friction wheels pivoted to the vacuum-chamber and fitted to the collar between the trough and the seat, as and for the purpose set forth.

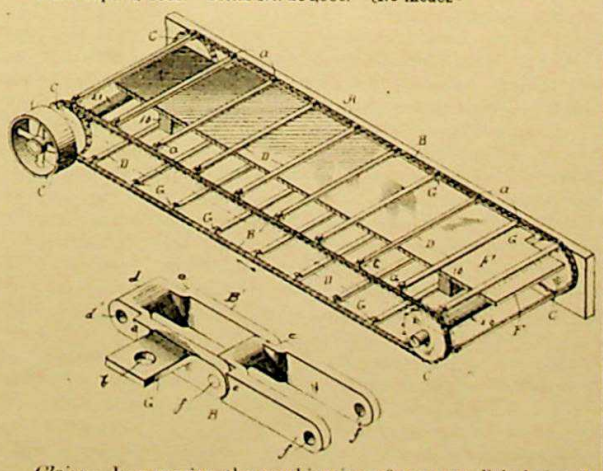
21. In a fur-forming machine, the combination, with the turn-table, of a vacuum-chamber having a circular seat upon its top, a collar upon the turn-table fitted to such seat, an annular gear formed upon the turn-table outside such collar between the water-trough and the seat, and anti-friction wheels and a rotating pinion fitted to the said collar and annular gear between the annular trough and the seat, as and for the purpose set forth.

22. A fur-forming machine comprising a turn-table, a vacuum-chamber of circular form, a water-pan fitted within the bottom and curved upwardly at its center and periphery, guides sustained upon the center of the pan, and a movable spindle fitted to the guides and provided at the top with the air-check *p*, as and for the purpose set forth.

23. A fur-forming machine comprising a turn-table, a vacuum-chamber of circular form, a water-pan fitted within the bottom and curved upwardly at its center and periphery, a circular seat upon the top of the vacuum-chamber, a collar upon the turn-table fitted to such seat, a bead projected from the seat below the collar, and a water-trough arranged beneath the periphery of the turn-table and having a circular support fitted to the seat and resting upon the bead, as and for the purpose set forth.

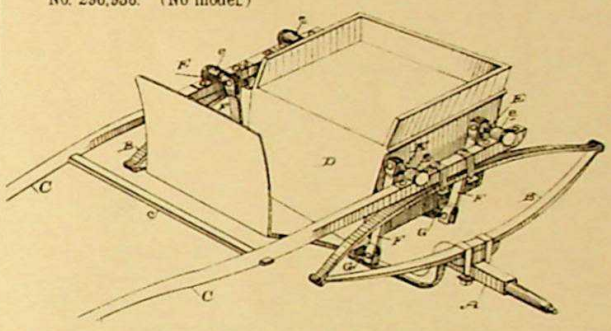
24. A fur-forming machine comprising a turn-table and a vacuum-chamber sustaining the same, a spray-discharger adjacent to the turn-table, a water pipe and cock to supply water to the spray-discharger, an air-inlet in the vacuum-chamber beneath the turn-table, and a cam operated by the driving-shaft of the machine and connected with the air-inlet, as and for the purpose set forth.

404,460. STRAW-CARRIER. GEORGE AKERSON, Weston, Mo. Filed Sept. 4, 1888. Serial No. 284,580. (No model.)



Claim.—In a carrier, the combination of two parallel chains B, made up of a series of connected U-shaped links B', the butt-end *d* of said links being cut away and provided with recesses *e* at its opposite sides for reception of the opposite end of the next link, said butt-end being provided with transverse perforation *d'*, and the opposite end of the next link, being provided with perforation *f'*, registering with the perforation in the butt-end of the first-mentioned link, pins *f*, which are passed through the perforation in the butt of one link and perforation in the end of the next link, transverse lugs G, having perforations *b* and formed integral with and projecting at right angles from one side of a number of links upon the inner sides of both chains, transverse slats D, mounted upon lugs G, and bolts *a*, passed through perforations *b* in said lugs and corresponding perforations in said transverse slats, substantially as set forth.

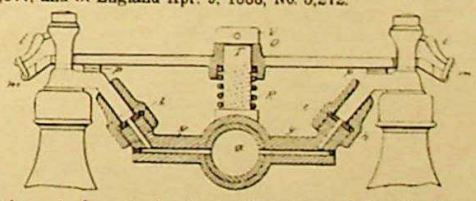
404,461. VEHICLE. HERMAN ARENBERG, Edgwood, Cal., assignor of one-half to George J. Clark, same place. Filed Jan. 19, 1889. Serial No. 296,936. (No model.)



Claim.—1. In a vehicle, and in combination with its running-gear and the body, the means for suspending the body from the running-gear, consisting of pivoted or rock bars on the body, pivoted or rock bolts on the running-gear, and intervening links or hangers pivoted to both bolts and bars, substantially as described.

2. In a vehicle, and in combination with its axle, springs, shafts, and body, the means for connecting the body, consisting of the pivot or rock bolts E on top of the shafts, the pivot or rock bars G under the body, and the intervening hangers or links F, pivoted at their upper ends to the rock-bolts and at their lower ends to the rock-bars, substantially as described.

404,462. MANUFACTURING AND BOTTLING AERATED WATER. OCTAVE AVEDYK, Louvain, Belgium. Filed June 13, 1888. Serial No. 276,999. (No model.) Patented in Belgium Dec. 6, 1887, No. 79,822; in France Dec. 23, 1887, No. 187,787; in Germany Dec. 31, 1887, No. 17,877, and in England Apr. 9, 1888, No. 5,272.



Claim.—1. In a device for bottling aerated liquids, the combination of a main supply-pipe connected with a source of water, and also of gas, and provided with means by which one or both of them may be admitted to it, as desired, nozzles connected with said pipe by an invertible connection, and a yoke pivoted to the invertible connection, each end of which is adapted to engage the neck of a siphon-bottle and hold it against a nozzle, substantially as described.

2. In a device for bottling aerated liquids, the combination of a main supply-pipe connected with a source of water, and also of gas, and provided with means by which one or both of them may be admitted to it, as desired, nozzles connected with said pipe by an invertible connection, and a yoke pivoted to the invertible connection, each end of which is adapted to engage the neck of a siphon-bottle and hold it against a nozzle, and provided with a ring or hook adapted to engage the valve-lever of the bottle and maintain it in an open position while the bottle is being filled, substantially as described.

404,463. FILAMENT FOR INCANDESCENT ELECTRIC LAMPS. TURNER D. BOTTOM, New York, N. Y. Filed Sept. 29, 1888. Serial No. 286,778. (No specimens.)

Claim.—1. The process of manufacturing filaments, consisting of forming a deposit of molybdenum compound in or upon a suitable filamentary body.

2. The process of manufacturing filaments, consisting in submitting a suitable filamentary body to a bath of a molybdenum compound, then changing such compound to molybdic sulphide, substantially as described.

3. The process of manufacturing filaments, consisting in incorporating a suitable filamentary body with oxide of molybdenum and then heating the same in the vapor of a sulphur compound, whereby the oxide is transformed into sulphide.

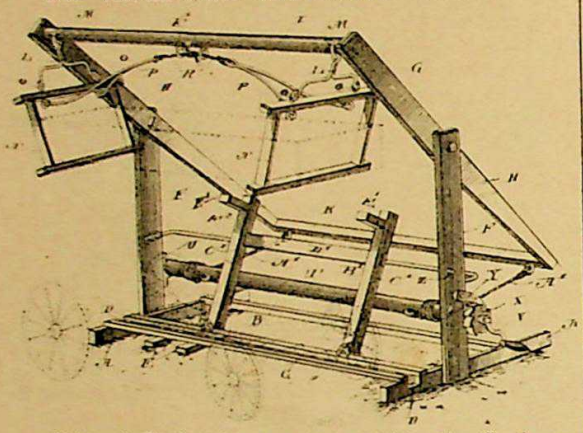
4. The process of manufacturing filaments, consisting in incorpo-

rating a suitable filamentary body with oxide of molybdenum and then electrically heating the same in the vapor of a sulphur compound, substantially as described.

5. The process of manufacturing filaments, consisting in incorporating a suitable filamentary body with oxide of molybdenum and then electrically heating the same in a rarefied vapor of a sulphur compound.

6. The process of manufacturing filaments, consisting in incorporating a suitable filamentary body with oxide of molybdenum and then electrically heating the same in the vapor of a compound of sulphur and hydrogen.

404,464. WAGON-BODY RAISER. WILLIAM S. BOURNE, Afton, Iowa. Filed Mar. 6, 1889. Serial No. 302,192. (No model.)



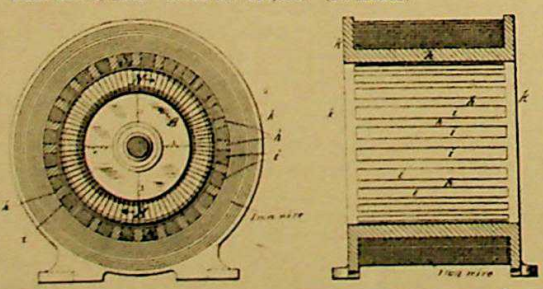
Claim.—1. The hoisting apparatus comprising the sills, the parallel guide-bars connecting the same, the cleats or stops E, arranged transversely under said guide-bars, the standards rising from the sills, the windlass-shaft journaled in bearings on the standards, said shaft having the crank and the ratchet-wheel, the pawl to engage the latter, the hoisting-frame pivoted between the standards, the ropes connecting one end of the hoisting-frame to the windlass, and the frames suspended from the inner side of the hoisting-frame and adapted to engage the wagon-bed, substantially as described.

2. The combination of the standards, the lifting-frame pivoted thereto and having the cross-bar I, the frames N, loosely hung on said cross-bar, and the rope arranged between the said frames, whereby they may be shifted along the said bar I, as set forth.

3. The combination of the standards, the lifting-frame pivoted thereto and having the cross-bar I, the rings F' on the said cross-bar, the frames N, loosely hung on the cross-bar I, the bails P, extending inward from said frames, and the rope secured to said bails and passing through the rings F', as set forth.

4. The combination of the standards, the lifting-frame pivoted thereto, having the cross-bar I, the rings M on said cross-bar, the bails L, hung from said rings, the frames N, depending from said bails, the bails P, extending inward from the frames N, and the rope between the bails P, as set forth.

404,465. ELECTRIC MOTOR. CHARLES S. BRADLEY, Yonkers, N. Y. Filed Oct. 5, 1888. Serial No. 287,319. (No model.)



Claim.—1. An electric motor comprising a field-magnet adapted to be energized by the eddying currents due to the rotation of the poles of the armature, in combination with an armature having magnetic poles rotating independently of its motion.

2. An electric motor comprising a field-magnet adapted to be energized by the eddying currents due to the rotation of the poles of the armature, in combination with an armature having magnetic poles automatically rotating independently of its motion.

3. An electric motor having an armature with insulated winding thereon and connections for the external circuit or circuits, in combination with a field-magnet disconnected from the armature and external circuits, and wherein the effective poles depend for existence on eddying currents circulating in its body.

4. In an electric motor, an armature constructed with no dependently-rotating magnetic poles, in combination with a mass composed partly of a magnetic metal and partly of a low-resistance metal placed in continuous inductive proximity to the armature and constituting its field-magnet.

5. In an electric motor, a rotary armature having independently-rotating magnetic poles, in combination with a surrounding compound annulus, partly iron or steel and partly of a low-resistance metal, the latter arranged in bars or sections parallel with the winding on the armature.

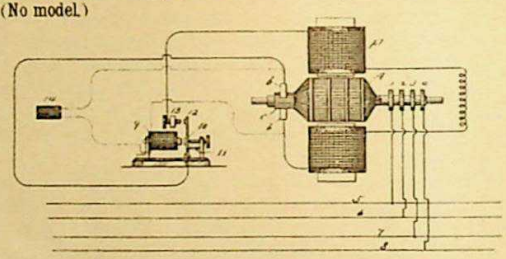
6. A compound annular field-magnet having its surface adjacent to the armature composed of alternate bars of iron or steel and a low-resistance metal—such as copper or bronze—substantially as described, whereby said low-resistance bars form paths for currents.

7. A compound annular field-magnet having its surface adjacent to the armature composed of alternate bars of iron or steel and a low-resistance metal—such as copper or bronze—and having the ends of said low-resistance bars connected to low-resistance heads or cross-bars, substantially as described.

8. A field-magnet composed of alternate bars of magnetic metal and low-resistance metal laid together to form a cylinder and bound externally with magnetic metal, which serves to retain the structure in form and complete the magnetic circuit.

9. A field-magnet composed of alternate bars of magnetic metal and low resistance metal laid together to form a cylinder and wound externally with iron or steel wire.

404,466. ALTERNATING-CURRENT ELECTRIC MOTOR. CHARLES S. BRADLEY, Yonkers, N. Y. Filed Feb. 18, 1889. Serial No. 300,279. (No model.)



Claim.—1. In an alternating-current electric motor having an induced field-circuit, the combination therewith of an automatic switch adapted to close said field-circuit on arrival of the armature at its normal speed.

2. In an alternating-current electric motor having an induced field-circuit, the combination therewith of an automatic switch adapted to close said field-circuit and means for closing said switch on arrival of the armature at its normal speed.

3. In an alternating-current electric motor having an induced field-circuit, the combination therewith of a switch adapted to close the field-circuit, means for holding said switch open till the armature arrives at its normal speed, and means for thereupon closing said switch automatically.

4. In an alternating-current electric motor having a rotary armature and its field-magnet provided with an energizing-circuit, the combination therewith of a switch in said field-circuit and means for automatically closing said circuit, dependent for operation upon the armature attaining its normal speed.

5. In an alternating-current differential-phase electric motor having a rotary armature and its field-magnet provided with an energizing-circuit, the combination therewith of a switch in said field-circuit and means for automatically closing said circuit, dependent for operation upon the armature attaining its normal speed.

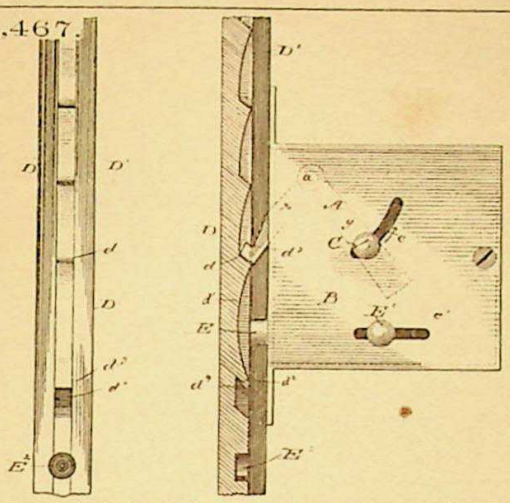
6. In an alternating-current electric motor comprising a stationary and a movable member, one of which has polar rotation set up in it by direct action of the operating-current and the other member has an energizing-circuit, the combination, with the said energizing-circuit, of a switch for opening and closing the same, and means for automatically closing said switch controlled by the speed of said movable member of the motor.

404,467. SASH-FASTENER. ROBERT J. BUCHANAN, Pittsburg, Pa. Filed Feb. 21, 1889. Serial No. 300,751. (No model.)

Claim.—1. The combination, substantially as hereinbefore set forth, of the lock frame or casing, the bell-crank lever pivoted thereto, and having an outwardly-projecting arm x formed with an outer end curved from the axis of the lever as a center, a rack-plate having teeth curved to correspond with the curved end of the arm x, and a handle C, secured to the inwardly-projecting arm of the bell-crank lever and working in a curved slot in the lock frame or casing.

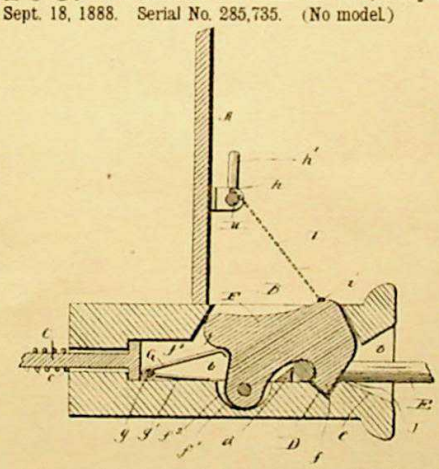
2. The combination, substantially as hereinbefore set forth, of the lock frame or casing, the bell-crank lever pivoted thereto and having an outwardly-projecting arm x and an inwardly-projecting arm y, the

404,467.



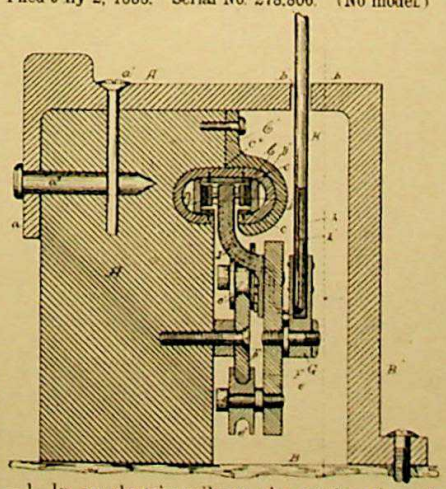
knob or handle C, its shank c^2, projecting through a curved slot in the lock-casing and through the arm y of the bell-crank lever and adapted to turn therein, a spring interposed between the inner end of the shank and the bell-crank lever, and the teeth c^3 on the shank, which engage with notches c' formed in the curved slot of the lock-casing, for the purpose specified.

404,468. CAR-COUPLING. JAMES E. BULL, Tracy City, Tenn. Filed Sept. 18, 1888. Serial No. 285,735. (No model.)



Claim.—The combination, with the draw-head B, longitudinally recessed, as at b, and having a vertically-communicating recess, and having the bottom recesses D and f^2, of the hook F, having the end f fitting in the recess D and the depending portion f' pivoted in the recess f^2 and extended to form the rearwardly-projecting shoulder f^3, and of the transverse shaft g, mounted in the rear end of the longitudinal recess b, and the V-shaped spring G, having its angle bent to form a shaft embracing eye, and one terminal bearing against the bottom of the recess b and the other against the under surface of the shoulder f^3 of the hook, substantially as specified.

404,469. ELECTRIC RAILWAY. WILLIAM CANNELL, Cleveland, Ohio. Filed July 2, 1888. Serial No. 278,806. (No model.)



Claim.—1. In an electric railway, the combination of a trough provided with a longitudinal slot, a conduit and a rail located within said trough, an insulated conductor secured within said conduit, a current-collector engaging with the conductor, a carriage having bearing on said rail and located out of vertical line with the slot of said trough, and a flexible connection connecting said conductor and operating-vehicle, substantially as set forth.

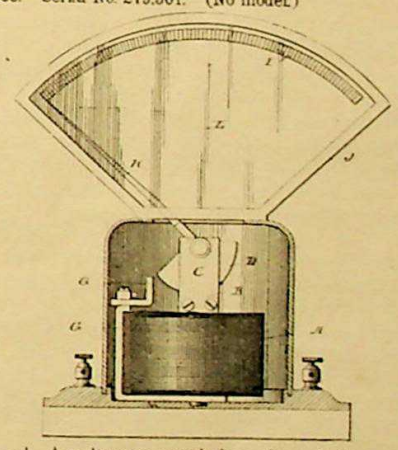
2. In an electric railway, the combination of a sleeper provided with a longitudinal groove, a conduit carrying a conductor secured partially within said groove, said conduit open on its lower face only, and a rail projecting over and protecting said conduit, substantially as set forth.

3. In an electric railway, the combination of a sleeper, a conduit C, secured thereto, and a rail that projects beyond the face of said sleeper, said rail provided with a downwardly-projecting flange, a bolt securing said rail to said sleeper, said bolt provided with an opening, and a cotter fitting in said opening, substantially as set forth.

4. In an electric railway, the combination of a trough provided with a slot, a non-conducting conduit located therein, an insulated conductor secured within the latter, a current-collector engaging with said conductor, and a coupling connected, respectively, with said cable and the operating-vehicle, said coupling being flexible where it passes through said slot, substantially as set forth.

5. In an electric railway, the combination of a trough provided with a longitudinal slot, a conduit and a rail located within said trough, an insulated conductor secured within said conduit, a current-collector engaging with the conductor, a carriage having bearing on said rail and located entirely within said trough, and a coupling engaging with said carriage and the operating-vehicle and flexible its entire length, substantially as set forth.

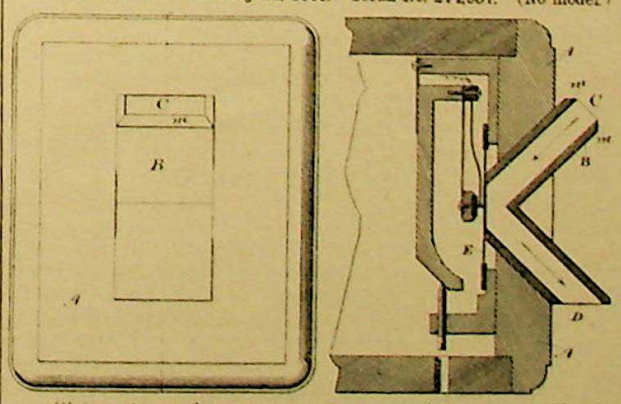
404,470. VOLTMETER. LEO DAFT, Plainfield, N. J. Filed July 10, 1888. Serial No. 279,501. (No model.)



Claim.—1. A voltmeter consisting of a coil, the core of which is provided with a slotted extension supporting a cam-shaped armature within the slot, and having a pointer connected to the armature, whereby the cam-shaped armature is normally maintained in a uniform field of force, and is operated by repulsion in accordance with the variations of the current passing through the coil, substantially as described.

2. In a voltmeter, the combination of the coil, the slotted core-extension, the cam-shaped armature supported therein, and a slotted adjustable polar extension G', substantially as described.

404,471. TELEPHONE-TRANSMITTER. EDWIN S. DRAKE, Cambridge, Mass. Filed May 24, 1888. Serial No. 274,937. (No model.)

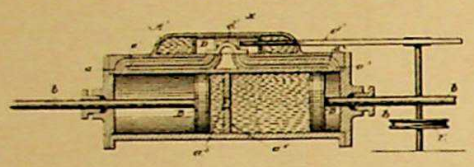


Claim.—1. A telephone-transmitter embodying the combination of a diaphragm E with a supporting case or front A, provided with separate but connecting inlet and outlet air conduits or passages, so

respectively arranged relatively to the diaphragm that the vocalized impulses directed to the diaphragm through the inlet-passage will be reflected directly therefrom through the outlet-passage, as and for the purposes specified.

2. The combination of diaphragm E with a door or front A, provided with air-passages C and D, leading obliquely to and from the diaphragm at equal angles thereto, coinciding with the angles of incidence and reflection of the sound-waves conducted thereto and therefrom through said passages, as specified.

404,472. STEERING APPARATUS. Ambrose C. Dunn, New York, N. Y., assignor to the Pneumatic Steering Gear and Manufacturing Company, same place. Filed July 27, 1887. Renewed Apr. 26, 1888. Again renewed Nov. 7, 1888. Serial No. 290,256. (No model.)



Claim.—1. The combination, with the rudder of a vessel and located on the deck or elsewhere, of a steering-cylinder provided with a perforated partition, and with pistons which connect with the rudder, and which has supply and exhaust ports at its ends, and a valve-chest containing a valve connected with and operated from the pilot-house first to open a supply-port at one end and an exhaust-port at the other, and then close the ports at both ends, substantially as described.

2. The cylinder provided with a central partition dividing it into two separate chambers communicating with each other by means of an opening in said partition, each chamber having an independent piston, and there being a liquid interposed between the pistons, whereby motion of either piston is at once communicated to the opposite piston, substantially as and for the purpose set forth.

3. The cylinder divided into two equal communicating chambers, each provided with an independent piston, and there being a liquid interposed between the pistons, whereby motion of either piston is at once communicated to the other piston, the cylinder having a separate chamber communicating with the space between the piston-heads, which chamber serves as a reservoir for an additional supply of interposed liquid to prevent leakage and insure a full supply at all times, substantially as described.

4. The combination, with a cylinder provided with a perforated partition and having an inlet and an exhaust port at each end, the inlet-port being beyond the exhaust-port at or near the end of the cylinder, of pistons arranged as described, and at the end of the outward stroke covering an exhaust-port, thus compressing the confined fluid, cushioning and preventing the rudder from going too far over, substantially as set forth.

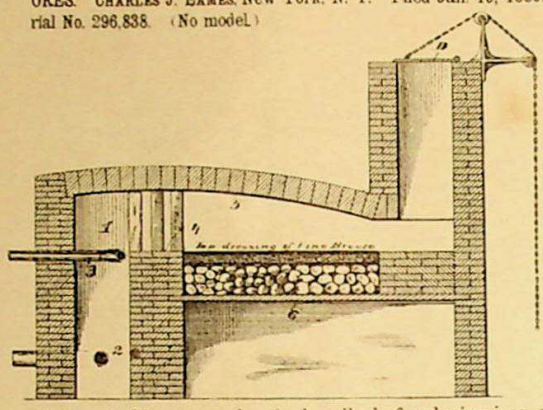
5. The combination, with the steering-wheel, of cylinders having pistons and containing liquid against which the pistons bear, pipes containing liquid—further, cylinders having pistons and containing liquid which bears against them—and a rod which actuates a wheel or lever connected with the valve-stem, substantially as and for the purpose described.

6. The combination, with the rudder of a vessel having a yoke upon its post, of steering-cylinders the pistons of which connect directly with the yoke on the rudder-post and operate in opposite directions, the cylinders having supply and exhaust ports at their ends, and valve-chests containing valves connected with and operated from the pilot-house, and controlled first to open supply-ports at opposite ends of each cylinder and exhaust-ports at these ends and then close the ports at both ends, substantially as described.

7. The combination, with a steering-cylinder having a perforated partition, and the rudder having a quadrant, yoke, or tiller, of devices interposed between the same and the valve at the ports of the cylinder, the devices being operated from a moving part—such as the rudder—automatically to close the ports immediately after a movement of the rudder, whereby aeriform fluid will be confined in the cylinder on both sides of its piston or pistons and the rudder will be held elastically, substantially as specified.

8. The combination, with a steering-cylinder having a piston rod or rods and provided with a valve-chest containing a valve provided with a stem, of two cylinders containing pistons, a pipe connected with both cylinders, the cylinders and pipes containing a liquid, and a rod or rods connected to the piston rod or rods of the steering-cylinder or other part moved thereby, the rod or rods being fixed to the piston in the one cylinder and operating to push the piston and force the liquid in its cylinder through a pipe against the piston in the other cylinder, the piston-rod of which connects with the valve-stem of the steering-cylinder and causes the valve to close the ports, as set forth.

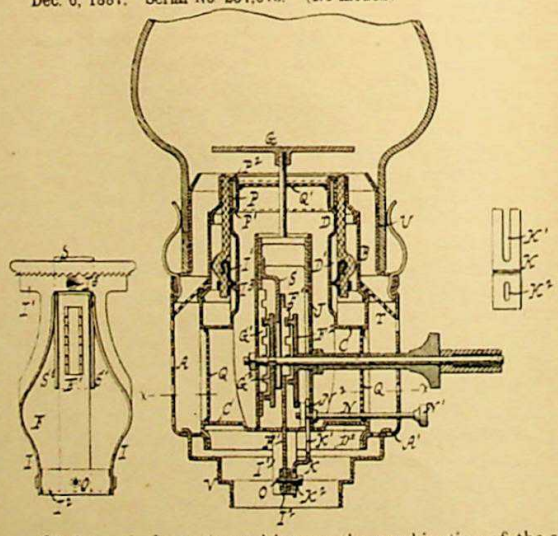
404,473. PROCESS OF REDUCING IRON DIRECT FROM ITS ORES. Charles J. Eames, New York, N. Y. Filed Jan. 19, 1889. Serial No. 296,838. (No model.)



Claim.—1. The process herein described of reducing iron ore in reverberatory furnaces, which consists in subjecting a stratum composed entirely of an admixture of granulated iron ore and granulated coke-breeze or anthracite coal and devoid of flux, said stratum arranged on a coke-hearth, to the reverberatory action of a neutral flame or neutral gas-flame in a low state of combustion and under sufficient pressure to prevent the entrance of air into the furnace, substantially as and for the purposes specified.

2. The process herein described for reducing iron ore in reverberatory furnaces, which consists in subjecting a stratum of admixed granulated iron ore and granulated coke-breeze or anthracite coal and devoid of flux, said stratum being arranged on a coke-hearth and covered by a thin layer of coke-breeze, to the action of a neutral gas-flame under such pressure as will prevent the entrance of air into the furnace, substantially as and for the purposes specified.

404,474. ARGAND LAMP-BURNER. Peter J. Foulon, New York, assignor of one-half to George B. Constantine, Brooklyn, N. Y. Filed Dec. 6, 1887. Serial No. 257,070. (No model.)



Claim.—1. In an Argand burner, the combination of the stop-arm having two vertical slots, the screw-rod fitted into one of said slots for adjustably connecting the stop-arm to a fixed portion of the burner, and the wick-carrier having a stop-pin fitted into the other of said slots for regulating the motion of said carrier, substantially as and for the purpose described.

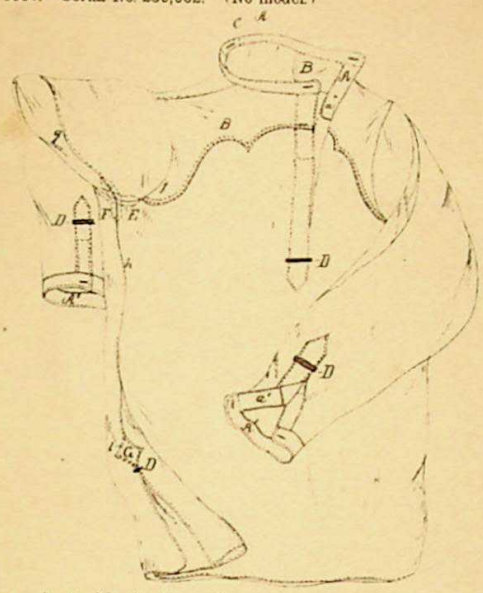
2. In an Argand burner, the combination, with the wick-tube, of a ring fitted thereon with an air space or chamber between said tube and the ring, substantially as and for the purpose described.

3. In an Argand burner, the combination, with a wick-tube having a flange on the upper end and a shoulder below said end, of a ring fitted loosely on said tube between said flange and shoulder, substantially as and for the purpose described.

4. In an Argand burner, the combination, with the open perforated shell, the inner and outer tubes, and the transverse tubes connecting the same, of the air-distributers fitted into or on said transverse tubes, substantially as and for the purpose described.

5. In an Argand burner, the combination, with a wick-carrier having an attached rack, which is left free on the upper end, as shown, of a spreader and extinguisher, also having an attached rack, and an arm secured to said spreader-rack to form a guide or support for the wick-rack, substantially as described.

404,475. SHIRT. BERTHOLD GALLAND, Scranton, Pa. Filed May 28, 1887. Serial No. 239,662. (No model.)



Claim.—1. A shirt having collar-band and wrist-band linings provided each with lateral integral extensions at its ends, adapted to form also facings for the edges of the adjacent openings, substantially as herein set forth.

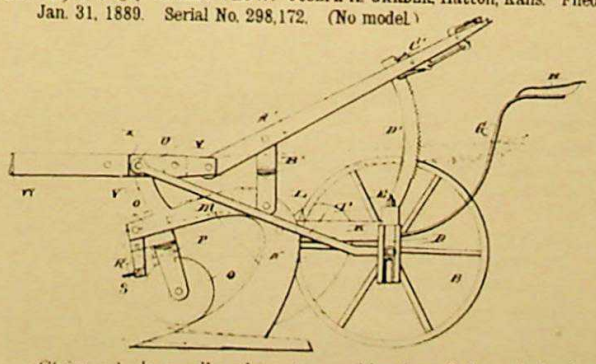
2. A shirt having its collar-band provided with a button-hole re-enforce C, formed of a piece of cloth or other material inserted between the plies of the band at the place where the button-hole is cut, the ends of the said piece being doubled over across and outside of the ends of the button-hole, whereby the shirt is strengthened opposite to the ends of the button-hole, as herein set forth.

3. A shirt having a stay at the lower end of the opening or placket in the front or back of the same, the said stay consisting of a series of overcast loop-stitches, forming a continuous ridge of closely-laid threads transverse to the length of the opening and composing a bar across the width of the facing, substantially as herein set forth.

4. A shirt having gusset projections G G formed integrally on the adjoining edges of the cloth at the lower terminations of the side seams, the adjacent projections overlapping each other and adjacent portions of the cloth and being united to the cloth by a continuous row or rows of stitches near their edges and around the entire circuit thereof, substantially as and for the purpose herein set forth.

5. A shirt having gusset projections G G formed integrally on the adjoining edges of the cloth at the lower terminations of the side seams, the adjacent projections overlapping each other and adjacent portions of the cloth and being united to the cloth by a row or rows of stitches near their edges and the lower hem or hems of the shirt being continued along the lower edges of the projections and secured by stitching to the cloth, substantially as and for the purpose herein set forth.

404,476. SULKY-PLOW. JOSEPH A. GARBER, Hatton, Kans. Filed Jan. 31, 1889. Serial No. 298,172. (No model.)



Claim.—1. In a sulky-plow, the combination of the axle having a vertically-slotted plate, the slide moving in said slot and having a forwardly-extending arm, the plow-standard attached to the front end of said arm and carrying the plow, and the forwardly-extending beam having upwardly-extending bracket, the tongue connected pivotally with said bracket, an adjusting-lever pivoted to the rear end of the tongue, and a link connecting said lever with the plow-beam, substantially as set forth.

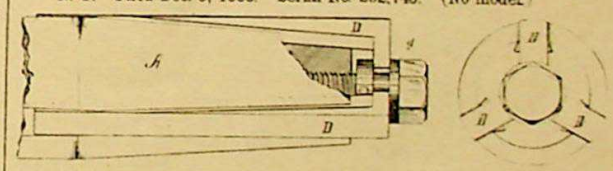
2. The combination of the axle having forwardly-extending converging arms, the plow, the beam of which is provided with an upwardly-extending bracket mounted upon a bolt connecting the front ends of said arms, the tongue having a rearwardly-extending arm mounted pivotally upon said bolt, an adjusting-lever pivoted at the rear end of the arm extending rearwardly from the tongue and connected by a pivoted link with the rear end of the plow-beam, a spring-latch at the rear end of the adjusting-lever engaging a segmental rack, and an arm connecting the plow-standard with a vertically-movable slide, substantially as set forth.

3. In a sulky-plow, the combination of the sulky-truck, the vertically-adjustable plow, the tongue having a laterally-extending bracket provided with a rearwardly-extending arms, whereby it is mounted detachably and reversibly between a pair of arms extending forwardly from the axle, the adjusting-lever pivoted to the rear end of the rearwardly-extending arm of the tongue and connected with the rear end of the plow-beam by a pivoted link, and an arm extending upwardly from the plow-beam and mounted pivotally between the converging ends of the forwardly-extending arms of the axle, substantially as set forth.

4. In a sulky-plow, the herein-described reversible tongue provided at its rear end with a laterally-extending bracket terminating in a rearwardly-extending arm, the same being formed by a pair of plates secured to the sides of the tongue, bent in proper direction parallel to each other and bolted together, suitable spacing-plates being interposed, substantially as set forth.

5. The combination of the sulky-truck, the plow adjustable vertically with relation thereto, and having a beam terminating in rear of the plow-point, and provided at its front end with a downwardly-extending arm having a clevis, a pair of converging arms extending forwardly from the axle and connected at their front ends by a bolt passing through an arm extending upwardly from the plow-beam, the reversible tongue having at its rear end a laterally-extending bracket terminating in a rearwardly-extending arm mounted upon the bolt which connects the forwardly-extending arms of the axle, the adjusting-lever pivoted to the rear end of the arm, extending rearwardly from the tongue and connected with the rear end of the plow-beam with a pivoted link, and means for retaining said lever in any position to which it may be adjusted, substantially as set forth.

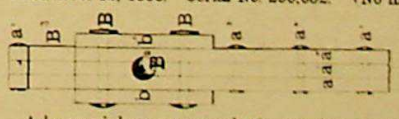
404,477. EXPANSIBLE MANDREL. PATRICK H. GRIFFIN, Buffalo, N. Y. Filed Dec. 5, 1888. Serial No. 292,745. (No model.)



Claim.—1. In expansible mandrels, the combination, with a tapering arbor A, provided with an internally-screw-threaded central aperture and with parallel dovetail longitudinal grooves at the periphery of the wedge-shaped jaws D, having parallel toes *g* at their heads, and the spindle B, having the head C and circular nut *e*, the whole being constructed to operate substantially as and for the purpose stated.

2. In expansible mandrels, the combination, with a tapering arbor having dovetailed longitudinal grooves at its periphery, of taper jaws having toes at their heads, a revolving screw-threaded spindle engaging said arbor, provided with a head having a circular base, and a removable nut upon said spindle, said toes engaging the neck *f* in said spindle, substantially as and for the object stated.

404,478. LOOM-PICKER. EUGENE S. GRINNELL, Waltham, Mass., assignor of two-thirds to Eben W. Blake and Robert Burgess, same place. Filed Nov. 12, 1888. Serial No. 290,652. (No model.)



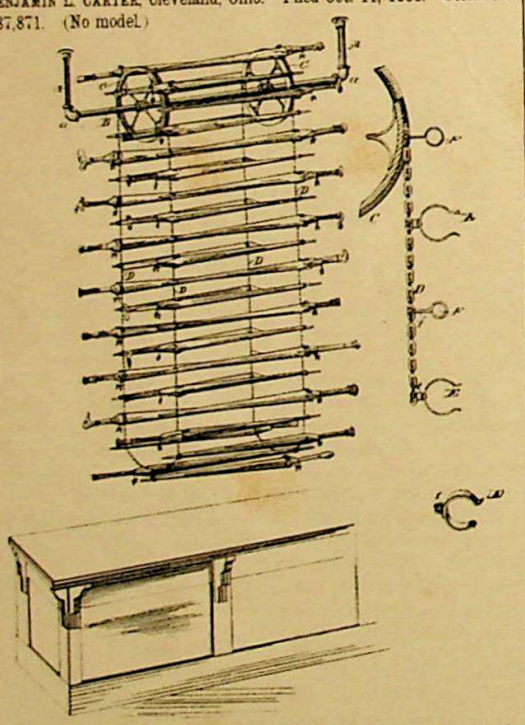
Claim. A loom-picker composed of a number of strips of leather secured together near the opposite ends thereof, having the striking face on the edge of said strips, and the re-enforcing strips on opposite sides secured to the body of the picker by rivets passing through the body at points above and below the striking-point, whereby provision is made for the lateral expansion of the body by separation of the strips when the picker comes in contact with a loom-shuttle.

404,479. GRAIN-BINDING MACHINE. FRANK HARPER, Auburn, assignor to the D. M. Osborne & Company, of New York. Filed June 16, 1888. Serial No. 277,292. (No model.)

Claim.—1. In a grain-binder, the combination, substantially as described and shown, of a rotary tying-bill, the rotary cord-holding disk provided with a series of peripheral cord-receiving notches mounted on a stationary axis to turn freely under the stress of the cord and in position to receive the cord at the side farthest from the tyer, the cord-clamping shoe embracing the edge of the disk and adapted to confine the two ends of the applied cord in successive notches of the disk, and mounted, substantially as described, to rise from the disk at either end independently of the other, the spring acting to urge the clamp toward the disk, and the needle or binder arm arranged to lay the cord across the tyer to the distant edge of the disk, whereby the disk is enabled to receive and hold both ends of the cord and to turn under the stress of the cord, so as to yield the latter to the tyer during the formation of the knot.

2. In a grain-binder, the combination of the rotary tying-bill, the rotary cord-holding disk provided with peripheral notches and mounted to turn freely on an axis fixed in relation to the tyer and in position to receive the cord at the side farthest from the tyer, the shoe or clamp embracing the edge of the disk and provided at the delivery end with the cord-retaining shoulder adapted to confine the cord in successive notches thereof and free to rise from the disk at either end independently of the other, the pressure-spring acting upon the shoe midway of its length, and the cord-carrying arm or needle arranged to lay the cord across the tyer and thence to the distant edge of the disk, whereby the one clamp is enabled to hold the two ends of the applied band and to slacken the cord to the tyer during the formation of the knot without the assistance of mechanism to turn or to retard the disk.

404,480. UMBRELLA-EXHIBITOR. FREDERIC HARRINGTON and BENJAMIN L. CARTER, Cleveland, Ohio. Filed Oct. 11, 1888. Serial No. 287,871. (No model.)



Claim.—1. An umbrella-exhibitor consisting in an endless carrier or carriers, and a wheel or wheels on which said carrier or carriers are supported, with holders for the umbrellas on the carrier or carriers, substantially as set forth.

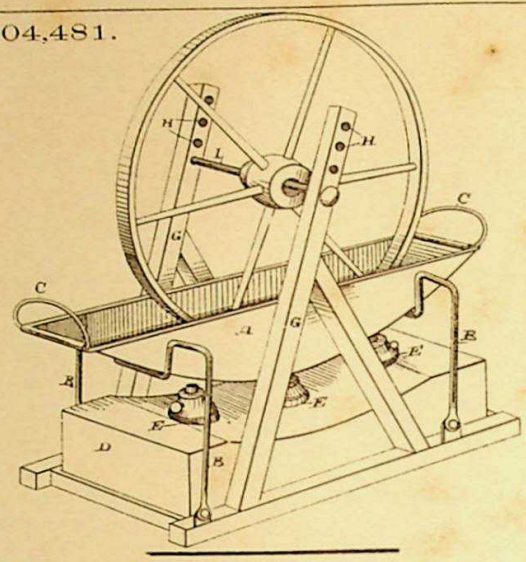
2. In an umbrella-exhibitor, endless chains, one of which has a spring-grip and the other a staple, with an eye for holding the umbrellas and wheels on which said chains are hung, substantially as set forth.

404,481. DEVICE FOR OILING WHEELS. FRANK W. HARRIS, Napa, Cal. Filed Nov. 1, 1888. Serial No. 289,780. (No model.)

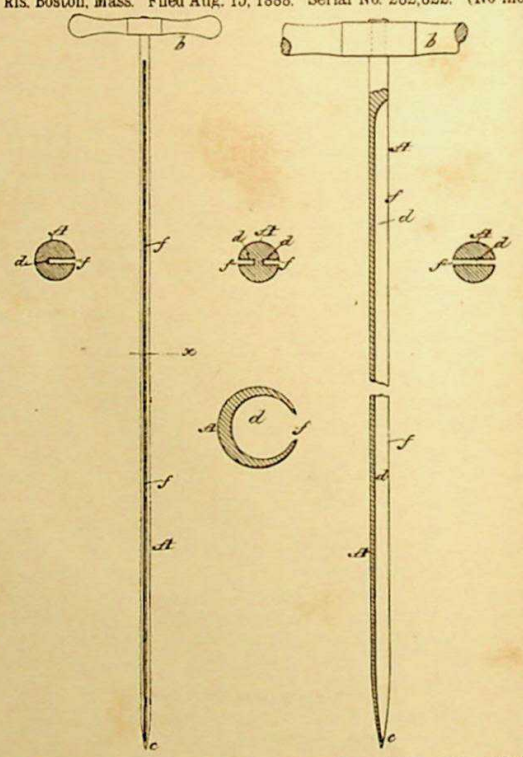
Claim.—1. A device for treating the fellies of wooden wheels, consisting of a segmental tank and supporting-standards, said standards being movable toward and from each other, whereby the tank is vertically adjusted, in combination with a lamp or heater beneath said tank, and other standards upon which a shaft or pin passing through the wheel-hub is supported, substantially as herein described.

2. The segmental removable tank, with movable standards for adjusting its height, a lamp or heater beneath the tank, and standards upon each side having the holes H, and with a shaft the height of which is adjustable in said holes to support wheels of different sizes with their rims dipping into the tank, substantially as herein described

404,481.



404,482. IMPLEMENT FOR MARKING CLOTH. NATHAN HARRIS, Boston, Mass. Filed Aug. 15, 1888. Serial No. 282,822. (No model.)



Claim.—A cloth-marking implement consisting of a spindle A, provided at one end with a handle *b* and at the opposite end with a sharp point *c*, and having a longitudinal chamber or recess for containing powdered chalk or other suitable marking substance, and a continuous longitudinal slot or groove *f* for the passage of the marking substance to the cloth as the spindle is forced through the same, substantially as and for the purpose described.

404,483. POLISHING COMPOUND. GEORGE W. HASTINGS, Grafton, assignor to Edmund M. Wood, Natick, Mass. Filed July 2, 1888. Serial No. 278,849. (Specimens.)

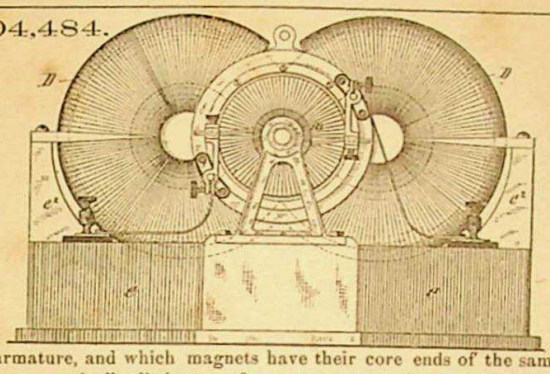
Claim.—As an improved article of manufacture, a polishing compound composed of carnauba-wax, ozocerite, crude or refined, spirits turpentine, French chalk, and oil of citronella, substantially as herein set forth and described.

404,484. DYNAMO-ELECTRIC MACHINE. WILLIAM HOCHHAUSEN, Brooklyn, N.Y. Filed Feb. 1, 1886. Serial No. 190,517. (No model.)

Claim.—1. In a dynamo-electric machine or motor, an armature core or carrier provided with shallow grooves or flutings, in which the armature-conductors are partially embedded, as and for the purpose described.

2. In a dynamo-electric machine or motor, a field-of-force magnet consisting of two electro-magnets whose cores are curved in the arc of a circle which, prolonged, would pass through the center of

404,484.



the armature, and which magnets have their core ends of the same name magnetically distinct, so far as concerns union, by a mass of magnetic material, but held in proper proximity and properly formed to constitute together a field-of-force pole-piece.

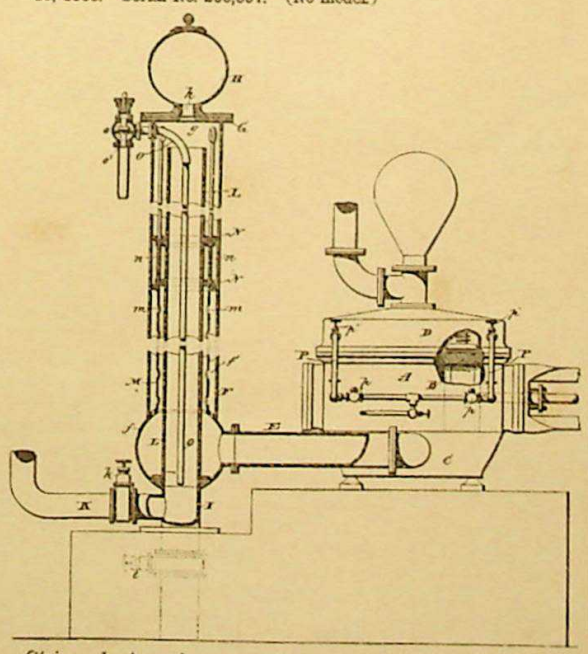
3. In a dynamo-electric machine or motor, a field-of-force pole-piece consisting of two magnet-core ends of the same polarity, arranged in proximity, with the axes of the magnet-cores at the end presented to the armature forming substantially a perpendicular to the circle of the armature periphery, in combination with uniting-pieces of non-magnetic material, as and for the purpose described.

4. In a dynamo-electric machine or motor, a field-of-force magnet consisting of two electro-magnets having like poles arranged on the same side of the armature, the cores of said magnets being formed of iron masses continuous in the direction of the magnetic axes, of the same or less area in cross-section than the body of the cores, as and for the purpose described.

5. In a dynamo-electric machine or motor, a field-of-force magnet composed of two electro-magnets whose like poles are placed in proximity but are magnetically disunited, in combination with the uniting diamagnetic block, and whose magnetic axes continued from their pole ends would cut the circular periphery of the armature at a right angle.

6. In a dynamo-electric machine or motor, a field-of-force magnet composed of two separate electro-magnets having their like poles juxtaposed, and whose poles are composed of curved iron plates superposed as described, the planes of said plates being transverse to the plane of curvature.

404,485. APPARATUS FOR PURIFYING WATER. OTIS S. HOWES, Cairo, Ill., assignor of one-half to Halliday Bros., same place. Filed Jan. 16, 1888. Serial No. 260,897. (No model.)

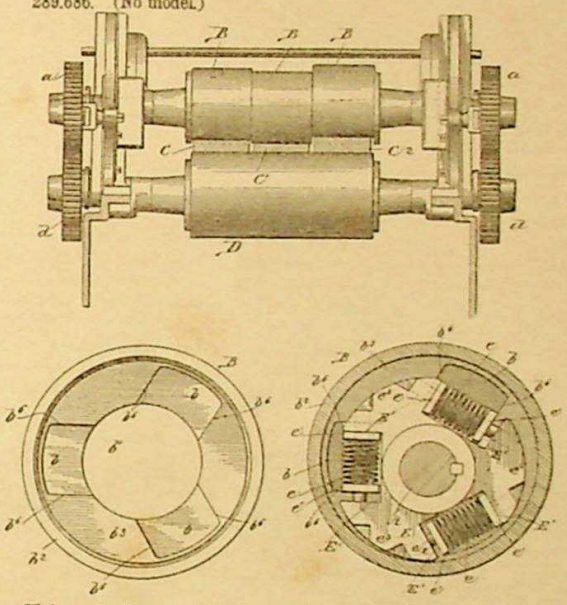


Claim.—1. As an improvement in apparatus for purifying water, the aerating-column provided with the central chamber for the admission of water, the centrally-discharging pipe for the admission of air, and the surrounding annular chamber having the perforated diaphragms for the mingling of said fluids, in combination with means for drawing water through said column, substantially as and for the purpose shown and described.

2. As an improvement in apparatus for purifying water, the combination, with a water-supply pipe or pipes and a force-pump, of an intermediate stand-pipe or column provided with a pipe which discharges air near the bottom thereof, and with an annular diaphragmed chamber in which the air and water are thoroughly mingled, substantially as and for the purpose set forth.

3. As an improvement in apparatus for purifying water, the combination, with a water-supply pipe or pipes and a force-pump, of a stand-pipe or column between said water-supply pipe or pipes and pump, said stand-pipe being provided with an air-discharging pipe which opens into the lower portion thereof, and also with an annular diaphragmed chamber in which the water and air are thoroughly mingled, and pipes connecting the inlet and outlet chambers of the said pump, substantially as and for the purpose shown and described.

404,486. FEED-ROLL FOR PLANING AND SURFACING MACHINES. LUCIUS P. HOYT, Aurora, Ill. Filed Oct. 31, 1888. Serial No. 289,686. (No model.)



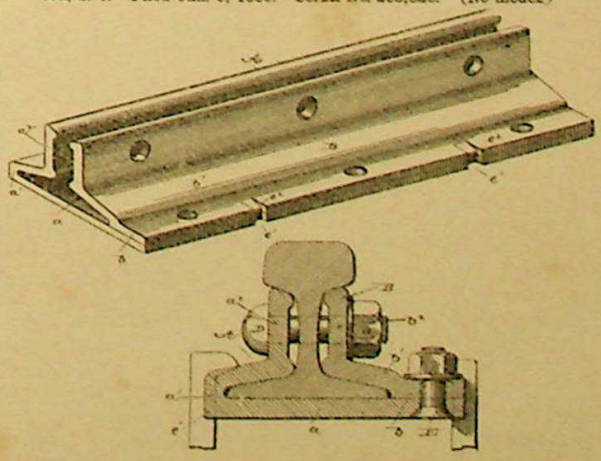
Claim.—1. The combination, with a rotary shaft and a feed-roll section arranged about the same, of a set of springs interposed as connections between the shaft and roll-section and arranged in lines tangential to the shaft, the compression and expansion of said springs during the lateral movement, hereinbefore set forth, of the roll-section being in lines tangential to the shaft, substantially as and for the purpose described.

2. The combination, with the hollow roll-section provided with internally-arranged abutments, of the shaft carrying a hub which is provided with jaws, plates arranged for engaging said jaws, and abutments and springs held between the plates, substantially as set forth.

3. A chambered roll-section containing radial guideways combined with a hub held upon a rotary shaft and carrying springs which are confined between followers that engage said guideways, substantially as and for the purpose set forth.

4. A chambered roll-section containing radial guideways, combined with a hub held upon a rotary shaft and carrying springs which are retained between followers c', that engage said guideways, said springs and followers being arranged in recesses on the hub and therein retained by pins e^2, substantially as and for the purpose described.

404,487. RAILWAY-RAIL JOINT. EUGENE P. JERVEY, Charleston, S. C. Filed Jan. 9, 1889. Serial No. 295,826. (No model.)

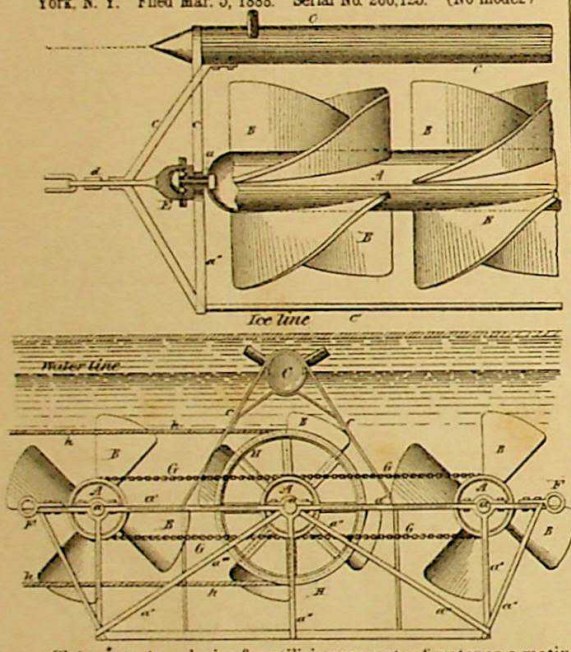


Claim.—1. In a rail-joint, the combination of the member A, provided with the base *a*, extending laterally beneath and beyond the rail, and the upwardly-extending portion to bear against the rail, the member B, provided with the flat portion *b*, to rest upon the exposed end of the base *a*, and the upwardly-extending portion to bear against the rail, and the vertical and horizontal fastening-bolts, the former extending through the base portions of the said members beyond the rail, and the latter passing through the upwardly-extending portions of the said members.

2. In a rail-joint, the member A, having the flat bed-plate *a*, the flange *a'*, the web a^2, and the grooves *c'*, in combination with the member D, having the flat bearing *b*, lip *b'*, web b^2, and grooves c^2, and the vertical and horizontal bolts uniting said parts in the manner described and shown.

3. In a rail-joint, the longitudinal members A B, adapted to embrace the rail and rest one upon the other, in combination with the vertical and the horizontal bolts, and the spikes passed through grooves in the two parts, as described and shown.

404,488. WATER-CURRENT MOTOR. FRANK G. JOHNSON, New York, N. Y. Filed Mar. 5, 1888. Serial No. 266,125. (No model.)

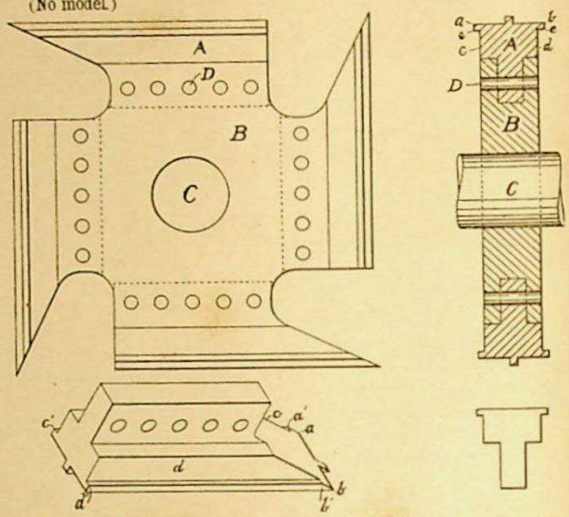


Claim.—1. In a device for utilizing currents of water as a motive power, the combination of the floating motors consisting of the hollow floating cylinders A A A, having the screw-blades B B B, the adjustable floating cylinder C, having suitable inlets and outlets for the ingress and egress of water and air, the connecting-bars *a' a' a'*, and ground-frame *a'' a'' a''*, whereby the entire device, by introduction of water into the cylinder C, is lowered to the bed of the river, and by pumping the water out of the said cylinder C the entire device is again elevated to or near the surface of the river, and whereby when the device is lowered to the bed of the river the blades B B B are prevented by the ground-frame *a'' a'' a''* from striking the ground, substantially in the manner and for the purpose set forth.

2. In a device for utilizing currents of water as a motive power, the combination of the floating motors consisting of the hollow floating cylinders A A A, having the screw-blades B B B, the adjustable floating cylinder C, having suitable inlets and outlets for the ingress and egress of water and air, the connecting-bars *a' a' a'*, and ground-frame *a'' a'' a''*, the connecting-chains G G, cable-wheel H, and cable *h h*, whereby the device can be lowered to the bed of the river by the introduction of water into the adjustable cylinder C and again raised to the surface of the river by the removal of the water from and the introduction of air into the said adjustable cylinder, substantially in the manner and for the purpose described.

3. In a device for utilizing currents of water as a motive power, the combination of the floating motors consisting of the hollow floating cylinders A A A, having the screw-blades B B B, the adjustable floating cylinder C, having suitable inlets and outlets for the ingress and egress of water and air, the connecting-bars *a' a' a'*, and ground-frame *a'' a'' a''*, the connecting-chains G G, cable-wheel H, cable *h h*, the floating jetty consisting of the two converging hollow floating cylinders I I, having the jetty-blades J J, cross-bars *i i i i*, and suitable inlets and outlets for the ingress and egress of water and air, whereby the said jetty and the said floating cylinders A A A can be simultaneously lowered to the bed of the river by the introduction of water into the adjustable cylinder C and into the jetty-cylinders I I, and then again simultaneously raised to the surface of the river by the removal of the water from and the introduction of air into the said cylinders C and I I, substantially as and for the purpose set forth.

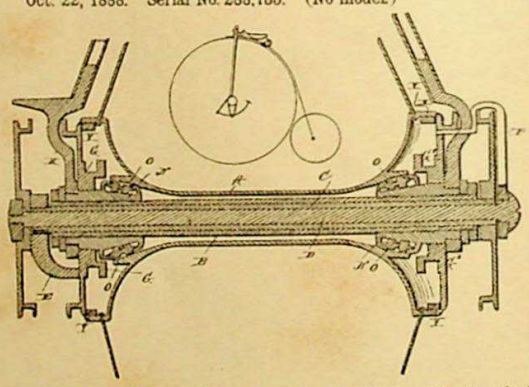
404,489. WOOD-WORKING TOOL. ISAAC R. JOSLIN and GEORGE T. LAWRENCE, New York, N. Y. Filed Nov. 20, 1888. Serial No. 291,367. (No model.)



Claim.—1. A cutter provided with a cutting-edge *a b*, similar in outline to the surface to be produced, in combination with a narrow supplemental side-cutting edge *a' c'*, formed by a substantially square jog extending to a cutter-body reduced in width immediately in rear of the said two cutting-edges, substantially as described.

2. In combination with a cutter-body, a surface-cutting edge *a b* thereon with lateral cutting-edges *a' c'* and *b' d'* on the sides thereof, said body being reduced in width immediately back of said cutting-edges with a square jog, substantially as set forth.

404,490. VELOCIPEDE. HOMER A. KING, Springfield, Mass. Filed Oct. 22, 1888. Serial No. 288,735. (No model.)



Claim.—1. The stationary tubular shaft B, with the fork-rests secured at each end by nuts, all inside of or between two outer retracing-drums.

2. A stationary tubular shaft inclosing two shafts arranged to revolve in opposite directions and bearing or encircled by only one revolving drum at each end.

3. The connection E, with one or more side projections, as E', for the purpose set forth.

4. The connection F, with one or more side projections, as F', for the purpose set forth.

5. A roller-case with lips projecting to inclose elongations on the ends of roller-bearings, and with an opening on one or both lips through which to insert the rollers.

6. A roller-case with projecting lips to inclose the elongated ends of rollers with an elevation, as N'', to hold in position and receive the end pressure of inclined rollers encircled by a central groove.

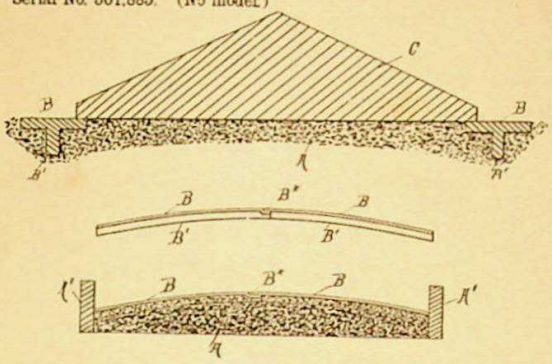
7. An inclined roller-bearing having two bearing-surfaces separated by a groove and with the bearing-surface on the smaller end broader than on the larger end, for the purpose set forth.

8. An inclined roller having two bearing-surfaces separated by a groove and an elongation at each end, for the purpose set forth.

9. The friction-spring K, doubled or thickened where wearing and bearing on a rotating part and with connection to J, for the purpose set forth.

10. The dogs H H, with connections I I to J and K, for the purposes set forth.

404,491. GUIDE-BAR FOR LINING UP THE CURVES OF STREET-SURFACES. JAMES M. MACK, Philadelphia, Pa. Filed Mar. 5, 1889. Serial No. 301,885. (No model.)

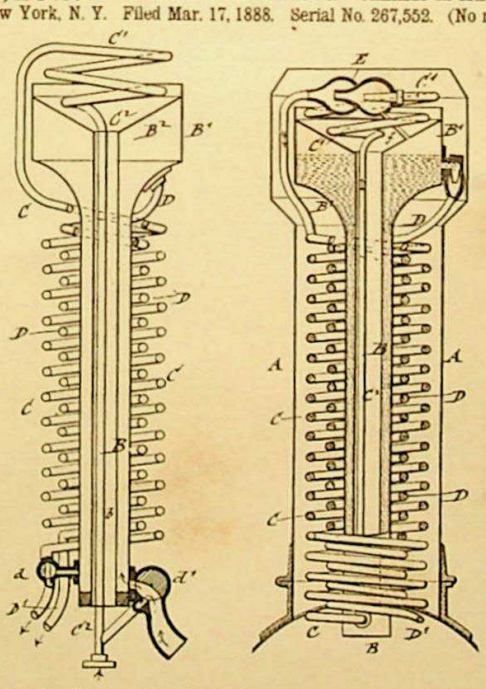


Claim.—1. A removable arched liner or gage for regulating the curve or arch of a road-bed formed upon a curve or shape to which the bed is to be conformed and having a flat top whose upper surface is adapted to coincide with the surface of the pavement, as set forth.

2. A removable arched liner or gage for regulating the curve or arch of a road-bed, consisting of a curved metallic piece T-shaped in cross-section, the head of the T resting upon and its top face being level with the upper surface of the filling, as set forth.

3. The combination of a pair of removable arched liners or gages extending from curb to curb and meeting in the center of the road-bed and having an offset-joint, as set forth.

404,492. CAR-HEATING APPARATUS. CHARLES A. MARRDER, New York, N. Y. Filed Mar. 17, 1888. Serial No. 267,552. (No model.)



Claim.—1. The combination, with the smoke-stack of a locomotive, of a closed tubular reservoir located in the smoke-stack and provided with a central exhaust-channel and heating-coils located in the space between the smoke-stack and the reservoir and being connected with said reservoir, and having an outlet-pipe leading to the radiating-pipes in the cars to be heated, substantially as set forth.

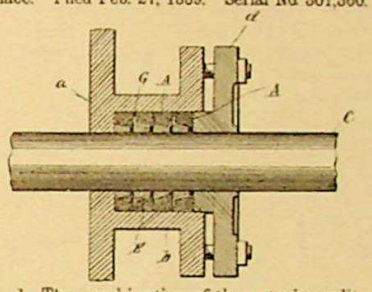
2. The combination, with the smoke-stack of a locomotive, of a closed tubular reservoir located in the smoke-stack and provided with an enlarged head and a central exhaust-channel, and heating-coils located in the space between the smoke-stack and the reservoir and being connected with said reservoir, and having an outlet-pipe leading to the radiating-pipes in the cars to be heated, substantially as set forth.

3. The combination, with the smoke-stack of a locomotive, of a closed tubular reservoir located in the smoke-stack, heating-coils in the smoke-stack connected with said reservoir, an inlet-pipe through the channel in the reservoir to one of said coils, and an outlet-pipe connected with the other coil, substantially as set forth.

4. The combination, with the smoke-stack of a locomotive, of a closed tubular reservoir in the smoke-stack provided with an enlarged head and funnel-shaped top, heating-coils connected to said reservoir, an intermediate heating-coil above said head, connected to one of said coils, an inlet-pipe connected with said intermediate coil, and an outlet-pipe connected to the other heating-coil, substantially as set forth.

5. The combination, with the smoke-stack of a locomotive, of a closed tubular reservoir in said smoke-stack, heating-coils connected to said reservoir, a supply-pipe passing through the inner channel of the reservoir, a coil connected with said supply-pipe at the upper part of the reservoir and with one of the heating-coils, an injector in said coil, and an outlet-pipe connected with the lower end of the other coil, substantially as set forth.

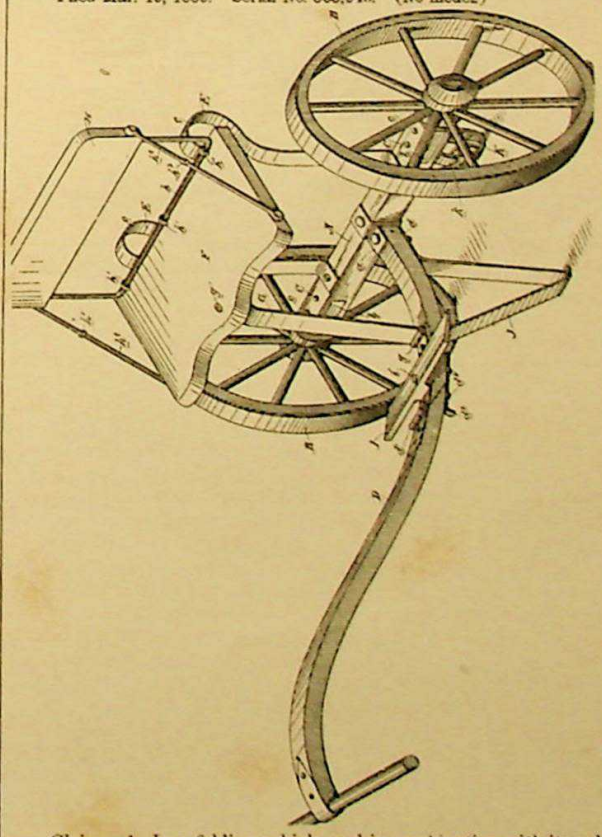
404,493. PACKING FOR PISTON-RODS. JOHN P. MURRAY, Jersey City, N. J., assignor of two-thirds to Robert Davis and Mark Curley, same place. Filed Feb. 27, 1889. Serial No. 301,360. (No model.)



Claim.—1. The combination of the exterior split packing-ring A, having the flared central opening C, the sheet metallic split expansion-ring E, flared in cross-section F to fit in said opening, and having the annular flange G, bearing on one side of said exterior packing-ring, and the split interior packing-ring I, having its exterior edge beveled to fit in the metallic expansion-ring, the said exterior ring being fitted in the packing-gland, and said interior ring being fitted on the piston-rod, substantially as described.

2. The combination of the exterior ring having the flared opening, the sheet metallic split expansion-ring, flared in cross section to fit in said opening and having the flange bearing on one side of the said ring, and the split interior packing-ring having its exterior edge beveled to fit in the flared expansion-ring, substantially as described.

404,494. FOLDING VEHICLE. JOSEPH MCBOYLE, Oakland, Cal. Filed Mar. 19, 1889. Serial No. 303,940. (No model.)



Claim.—1. In a folding vehicle, and in combination with its axle, wheels hinged to said axle, whereby they may be turned from their position when in use to a folded position when out of use, substantially as described.

2. In a folding vehicle, and in combination with its axle and wheels, journals on which the wheels are mounted, and a pivot or

hinge connection between said journals and the axle, whereby the wheels may be turned to a folded position, substantially as described.

3. In a folding vehicle, and in combination with its axle and wheels, journals on which the wheels are mounted, and vertical pivot-pins connecting the journals with the axle, whereby the wheels may be turned from a plane at right angles to said axle to a plane parallel therewith, substantially as described.

4. In a folding vehicle, and in combination with its axle and wheels, journals on which the wheels are mounted, fitted in slotted or grooved ends of the axle and adapted to be turned backwardly therein, and vertical pins pivoting the journals to the axle ends, whereby the wheels may be turned to the back of the axle in a plane parallel therewith, substantially as described.

5. In a folding vehicle, and in combination with its axle and wheels, the journals on which the wheels are mounted, fitting the axle ends, the vertical pivot-pins connecting the journals with the axles, whereby the wheels may be turned to a plane parallel with the axle, and the removable pins for holding the journals in line with the axle when the wheels are in use, substantially as described.

6. In a folding vehicle, and in combination with the axle, the tongue hinged or pivoted to said axle, adapted to be turned from a plane at right angles to the axle to a plane parallel therewith, substantially as described.

7. In a folding vehicle, and in combination with the axle, the tongue and the connection between the tongue and axle, consisting of the axle-clip into which the tongue fits, and the vertical pivot pin or bolt securing the tongue therein and permitting it to be turned to a plane parallel with the axle, substantially as described.

8. In a folding vehicle, and in combination with the axle, the tongue hinged or pivoted thereto, whereby it may be turned to a plane parallel with the axle, said tongue having a hinged joint in its own length, whereby one section may be folded over on the other section, substantially as described.

9. In a folding vehicle, and in combination with its wheeled axle and suitable seat-supports carried thereby, the seat hinged to said supports, whereby it may be turned from a horizontal to a vertical position, substantially as described.

10. In a folding vehicle, its wheeled axle, suitable seat-supports carried thereby, and its tongue, the seat hinged to said supports, whereby it may be turned from a horizontal to a vertical position, and the standard G, hinged to the tongue and adapted to support the seat in a horizontal position and to relieve it when about to be turned to a vertical position, substantially as described.

11. In a folding vehicle, its wheeled axle and the seat-supporting springs rising therefrom, in combination with the seat and the links hinged to both seat and springs, substantially as described.

12. In a folding vehicle, the combination of the hinged seat adapted to be turned from a horizontal to a vertical position, and the lazy-back hinged to the seat and supported by jointed braces, whereby said lazy-back may be folded down on the seat, substantially as described.

13. In a folding vehicle, and in combination with its tongue, the foot-rest pivoted upon said tongue and adapted to be turned from a position at right angles to said tongue to a position parallel therewith, substantially as described.

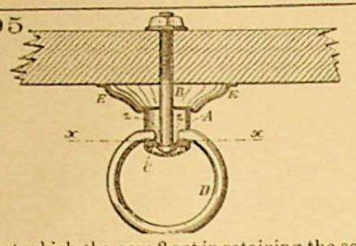
14. In a folding vehicle, the combination of the axle, the wheels having journals pivoted or hinged to said axle, whereby said wheels may be turned to the back of the axle in a plane parallel therewith, the seat-supporting springs rising from the axle and having backwardly-extending top portions avoiding the wheels when turned, and the seat supported by the springs, substantially as described.

15. In a folding vehicle, the combination of the axle, the wheels pivoted or hinged thereto, whereby they may be turned to the back of the axle in a plane parallel therewith, the seat-supporting springs rising from the axle, the folding seat hinged to said springs, the tongue hinged to the axle, whereby it may be turned to a plane parallel with the axle, and the seat-supporting standard hinged to the tongue, substantially as described.

16. A folding vehicle consisting of the axle, the wheels hinged thereto and adapted to be turned to the back of the axle, the springs rising from the axle, the seat hinged to the springs and adapted to be turned from a horizontal to a vertical position, the jointed tongue hinged to the axle and adapted to be turned to a plane parallel therewith, the seat-supporting standard hinged to the tongue, and the foot-rest pivoted on the tongue and adapted to be turned from a position at right angles to a position parallel with said tongue, substantially as described.

404,495. DRAWER-PULL. EDWARD P. NOBBS, Waterbury, Conn., assignor to the American Ring Company, same place. Filed Mar. 16, 1889. Serial No. 303,539. (No model.)

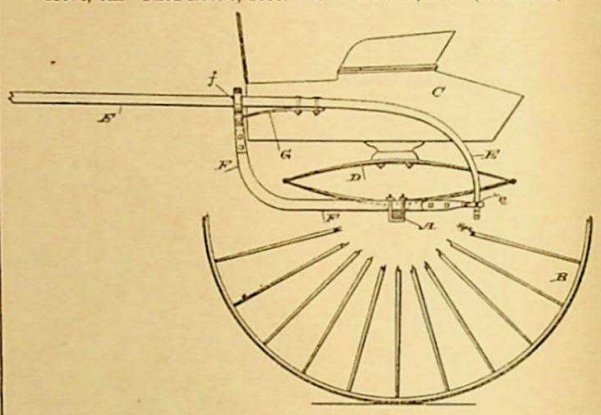
Claim.—1. The combination, with the screw B and ring D, of a socket A, having inwardly-projecting ears 2 cut from the socket at the openings into which the ends of the ring pass, and the washer or



head C, against which the ears 2 act in retaining the socket and screw in their relative positions, substantially as set forth.

2. The combination, with the ring D and the socket A, having inwardly-projecting ears 2, of the screw B, passing between the ends of the ring and having a head or washer that is clamped toward the end of the socket A by the ears 2, the ends of the ring passing into the openings in the sides of the socket behind such ears, substantially as set forth.

404,496. TWO-WHEELED VEHICLE. WILFRED PAGE, Penn's Grove, Cal. Filed Nov. 3, 1888. Serial No. 289,917. (No model.)



Claim.—1. In a wheeled vehicle, the axle, in combination with the bars clipped to the axle and having upwardly-curved forward ends loosely embracing the shafts, the shafts having downwardly-curved rear ends, a pivot or hinge connection between the rear ends of the shafts and the bars, and a spring-connection between the forward ends of the bars and the shafts, substantially as herein described.

2. In a two-wheeled vehicle, the axle and the shafts, in combination with connecting-bars clipped to the axle and extending in front of and behind said axle, said bars having loops or eyes which loosely embrace the shafts, a pivot or hinge connection between the rear ends of the shafts and the rear ends of the bars, and a spring-connection between the forward ends of the bars and the shafts, substantially as herein described.

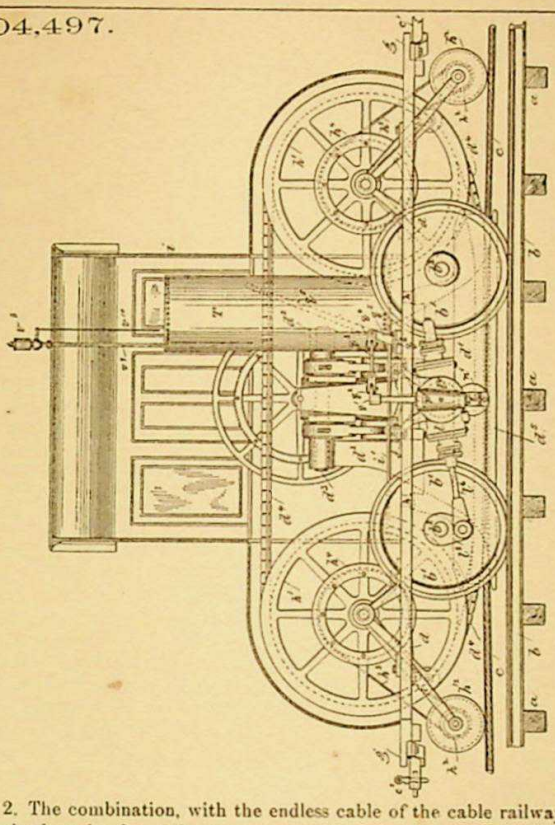
3. In a two-wheeled vehicle, the combination of the axle, the shafts extending over and past the axle and having downwardly-turned rear ends, the bars clipped to and extending on each side of the axle and having upwardly-turned forward ends loosely embracing the shafts, a pivot or hinge connection between the rear ends of the shafts and bars, and a spring-connection between the forward ends of said bars and shafts, substantially as herein described.

4. In a two-wheeled vehicle, the combination of the axle, the shafts extending over and past the axle, the bars clipped to and extending on each side of the axle, a pivot or hinge connection between the rear ends of the shafts and bars, a spring-connection between the forward ends of the bars and the shafts, and guide loops or eyes on said forward ends of the bars embracing loosely the shafts, substantially as herein described.

404,497. MEANS FOR OPERATING TRAINS UPON CABLE RAILWAYS. JOHN H. PENDLETON, Brooklyn, and ANDREW BRYSON, Jr., New York, assignors to the Rapid Transit Cable Company, New York, N. Y. Filed July 21, 1888. Serial No. 280,652. (No model.)

Claim.—1. The combination, with the endless traveling cable of the cable railway, the car wheels and axles of the motor-car and a grip for connecting the motor-car to the cable, of a reservoir upon said car for containing air under pressure, an air-pump oscillated by a connection to one of the car wheels or axle, a cock for admitting air to the pump, a pipe connecting the reservoir with the pump, a stationary cylinder and its piston and rod, a spring within said stationary cylinder and acting against its piston, a pipe connecting the stationary cylinder with said reservoir, and a connection from the stem of aforesaid cock to the piston-rod of the stationary cylinder, so that when air is being pumped into the reservoir said cock is more or less opened or closed automatically, according to the pressure of air in the reservoir, as set forth.

404,497.

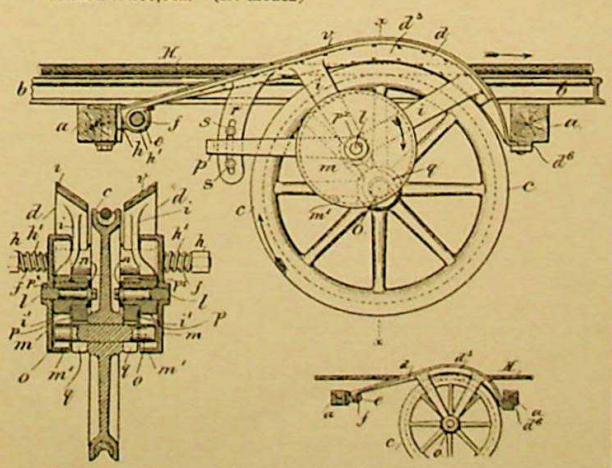


2. The combination, with the endless cable of the cable railway, the wheels and axles of the motor-car, and a grip for connecting said car to the cable, of the cylinder *l l*, and pistons l^7 and rods l^6 connected with the axle or wheels of the car, bearings for said cylinders, valves and ports in said cylinders and bearings, a reservoir for compressed air connected with said cylinders, the cocks p' p' and crank-arms q' q^5, links q^2 q^5 q^4, and rock-shaft q^6, for operating the cocks p' p' simultaneously, as set forth.

3. The combination, with the cylinder *l* and its pistons and rod and bearings for said cylinder, of the ports 2 3, valves 4, 5, 6, and 7, branch port p^4, port or passage-way p^2, and check-valve p^3, the cylinder n', piston n^2, rod n^3, and spring n^5, the cock p^7, an arm connecting the rod n^7 and stem of said cock, and connections from the cylinders *l n'* to an air-reservoir, substantially as and for the purposes specified.

4. The combination, with the cylinder *l* and its piston and rod, a connection from said cylinder to an air-reservoir, and the ports 2, 3, p^4, 8, and 9, valves 4, 5, 6, and 7 in said cylinder *l*, of the bearing l^4, having the ports or passage-ways 10 11 15 16 19 p^2, the check-valve p^3, the cock p', having the passage-ways 17 18, and the barrel of said cock having an exhaust-opening, substantially as and for the purposes set forth.

404,498. GUIDE-PULLEY FOR CABLE RAILWAYS. JOHN H. PENDLETON, Brooklyn, and LINCOLN MOSS, New York, assignors to the Rapid Transit Cable Company, New York, N. Y. Filed July 21, 1888. Serial No. 280,662. (No model.)



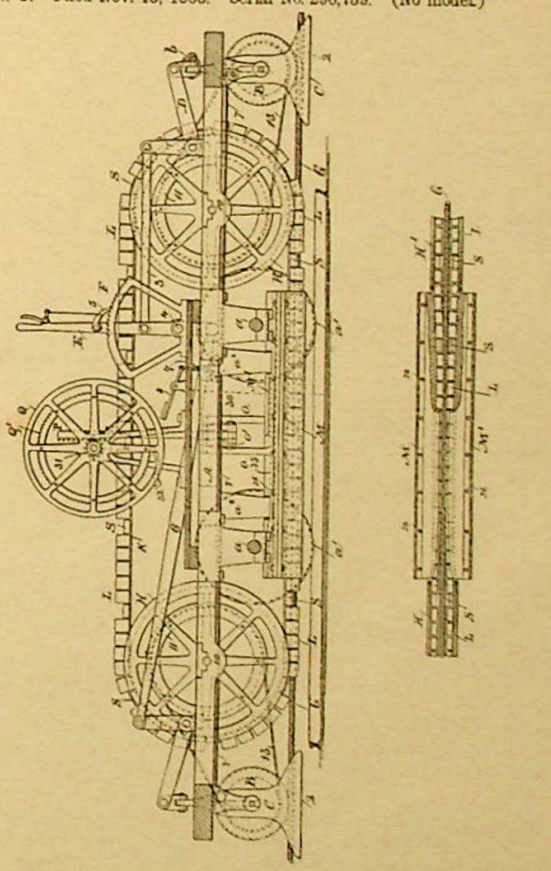
Claim.—1. The combination, with the guide-pulley, of the arms *d*, pivoted at one end and having inclined flanges adjacent to the guide-pulley, lifting-springs, and a stop at the other end of the arms to limit the upward movement, substantially as specified.

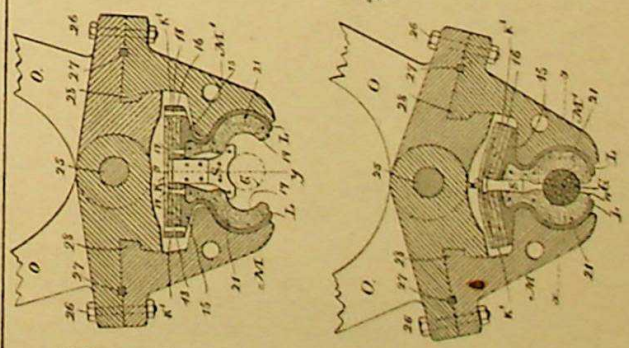
2. The combination, with the guide-pulley, of arms *d*, pivots at one end of such arms, and a spring for raising the arms and pulley, a stop to limit the upward movement, and flanged disks facing each other and receiving upon their flanges the axis of the guide-pulley, substantially as specified.

3. The combination, with the pivoted pulley-support and the guide-pulley and its axle, of disks or wheels at opposite sides of said pulley, pivots for said disks, circular flanges upon said disks for the ends of the axle of the guide-pulley to roll upon, and supports for the pivot-pins of the disks, substantially as specified.

4. The combination, with the pivoted pulley-support, guide-pulley and axle, flanged disks, and pivots and bearings for the same, of the swinging frame P, having forked ends to receive the axle *o*, the slotted arm *r*, and stops *s s*, substantially as and for the purposes specified.

404,499. GRIP FOR CABLE RAILWAYS. JOHN H. PENDLETON, Brooklyn, and CORNELIUS TIERS, ANDREW BRYSON, Jr., and LINCOLN MOSS, New York, assignors to the Rapid Transit Cable Company, New York, N. Y. Filed Nov. 13, 1888. Serial No. 290,739. (No model.)





Claim.—1. The combination, with the cable, of an endless belt, belt-wheels around which the belt travels, grip-blocks in pairs upon the endlesss belt adapted to swing apart for the reception or discharge of the cable, and mechanism for pressing the grip-blocks toward each other and at opposite sides of the cable, substantially as set forth.

2. The endless belt and belt-wheels around which the belt passes, in combination with grip-blocks connected to the endless belt, and sections of leather or similar material within the grip-blocks and recessed for the reception of the cable, and mechanism acting upon the grip-blocks for pressing them toward each other to grasp the cable, substantially as set forth.

3. The grip-blocks having convex exterior surfaces and sections

of leather or similar material in their inner faces, in combination with grip-jaws grooved to fit the convex exterior surfaces of the grip-blocks and mechanism for acting upon the grip-jaws to move them toward or from each other and grasp the cable between the surface of the grip-blocks, or to open such grip-blocks and allow the cable to drop, substantially as specified.

4. The grip-blocks L, formed as hollow castings with the bases 15, in combination with the sections or layers of leather or similar material introduced within the grip-blocks, the filling plates or layers 16, connected to the bases of the grip-blocks, and the endless belt K, to which the bases of the grip-blocks are fastened, substantially as set forth.

5. The combination, with the endless belt K and the wheels H H', of grip-blocks adapted to grasp the cable and provided with bases by which the grip-blocks are connected to the endless belt, and the pendent shields introduced at intervals and secured to the belt for preventing the cable being lifted too high and insuring the proper grasping of the cable as the grip-blocks are brought up at the sides thereof, substantially as set forth.

6. The combination, with the endless belt and the grip-blocks upon the same in pairs and adapted to receive the cable between them, of the grip-jaws having concave faces for acting against the grip-blocks, a pivot or hinge for connecting the grip-jaws together, and levers for acting upon the grip-jaws to open or close the same, substantially as set forth.

7. The combination, with the grip-jaws and the hinge or pivot for connecting the same together, of levers for acting upon the grip-jaws, links, a rack and pinion for opening or closing the grip-jaws, an endless belt between the grip-jaws, and grip-blocks in pairs connected upon the belt and passing between the grip-jaws, substantially as and for the purposes set forth.

8. The combination, with the guide-wheels B, lifters C, and mechanism, substantially as specified, for moving the same, of the endless belt, and grip-blocks in pairs, and the belt-wheels around which the endless belt passes, and pulleys and an endless band for giving motion to the belt-wheels from the guide-wheel when the cable is brought into contact with the latter, substantially as set forth.

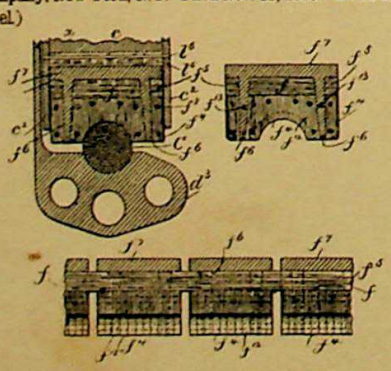
9. The combination, with the endless belt and grip-blocks connected thereon, of grip-jaws, a pivot or hinge for connecting the jaws together, such grip-jaws being made in two parts and bolted together to allow for the removal of the portions or jaws that act on the grip-blocks for repair or renewal, substantially as set forth.

10. The endless belt or band and the two ranges of grip-blocks in pairs upon such belt, in combination with the belt-wheels around which the endless belt passes, and a wheel receiving rotation from the cable, and a connection therefrom to the belt-wheels for giving to the belt and the two ranges of grip-blocks a motion in the same direction as the cable, substantially as set forth.

11. The combination, with the guide-wheel B, of a cable-lifter having a hook-shaped shoe 2 at the lower end, an actuating-lever and connections from the same to the lifter for raising and lowering the lifter, and a cord or connection for drawing the lifter aside as it is lowered, so that the shoe may pass in below the cable, substantially as specified.

404,500. ENDLESS BELT FOR GRIPS FOR CABLE RAILWAYS.

JOHN H. PENDLETON, Brooklyn, and ANDREW BRYSON, Jr., CORNELIUS TIERS, and LINCOLN MOSS, New York, assignors to the Rapid Transit Cable Company, New York, N.Y. Filed Nov. 13, 1888. Serial No. 290,740. (No model.)



Claim.—1. The combination, with the band *f*, forming the body of the belt, of the blocks f^4, of layers of leather or similar material, secured to the same and forming the outer portion of the endless belt, substantially as and for the purposes specified.

2. The combination, with the band *f*, forming the body portion of the belt, of the blocks f^4 upon the outer portion of the band, metal plates at the inner part or back of said band, and means for securing the blocks and plates to the band, substantially as set forth.

3. The combination, with the band *f* and blocks f^4 upon the outer portion of the same, of the metal plates f^7 at the inner part of said band *f*, and pins passing through the band and blocks for securing the plates and blocks to the band, substantially as set forth.

4. The combination, with the band *f*, blocks f^4, and plates f^7, having pins passing through the band and blocks, of wires f^{12}, passing through said pins and blocks, substantially as and for the purposes set forth.

5. The combination, with the band *f*, blocks f^4, and plates f^7, having pins passing through the band and blocks, of the metal case f^{14} around the sides of each block, substantially as specified.

6. The combination, with the band *f*, forming the body portion of the belt, of the blocks f^4 upon the same, each block being composed of layers of leather or other yielding material riveted together and secured to said band with the layers perpendicular to the band, substantially as and for the purposes set forth.

7. The combination, with the endless band *f*, forming the body portion of the belt, of metal plates f^7 at the inner part of said band, and blocks f^4, of leather or similar material, upon the outer portion of said band, each block having a semicircular groove in its outer face, substantially as and for the purposes set forth.

404,501. HAIR-CURLING DEVICE.

CARL A. G. PFANNE, Brooklyn, N. Y., assignor to Parker, Stearns & Sutton, same place. Filed Jan. 21, 1889. Serial No. 296,971. (No model.)

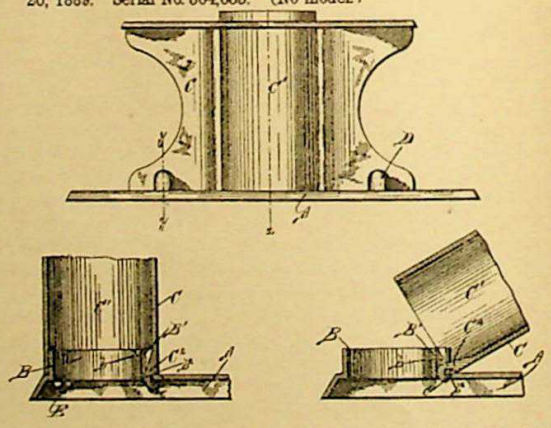
Claim.—1. A hair-curler composed of a stem upon which the hair is wound and an elastic retaining-cup on the end of the stem adapted to be turned inside out to uncover or to cover it, for the purpose stated.

2. A hair-curling device consisting of a stem upon which the hair is wound, having at each end an elastic retaining cup part, the length of both retaining parts being equal to the length of the stem, and adapted to be turned inside out upon the stem, for the purpose stated.

3. As a new article of manufacture, the herein-described rubber hair-curling device, consisting of a stem having on each end a cup-shaped retaining part adapted to be turned inside out, substantially as described, for the purpose specified.

404,502. RANGE.

GEORGE H. PHILLIPS, Geneva, N.Y. Filed Mar. 20, 1889. Serial No. 304,035. (No model.)



Claim.—1. The combination, with the range-plate, of the herein-described range-shelf provided with the hook C^2, substantially as and for the purpose specified.

2. The combination, with the range-plate, of the herein-described range-shelf having the hook C^2 cast integral therewith, substantially as and for the purpose specified.

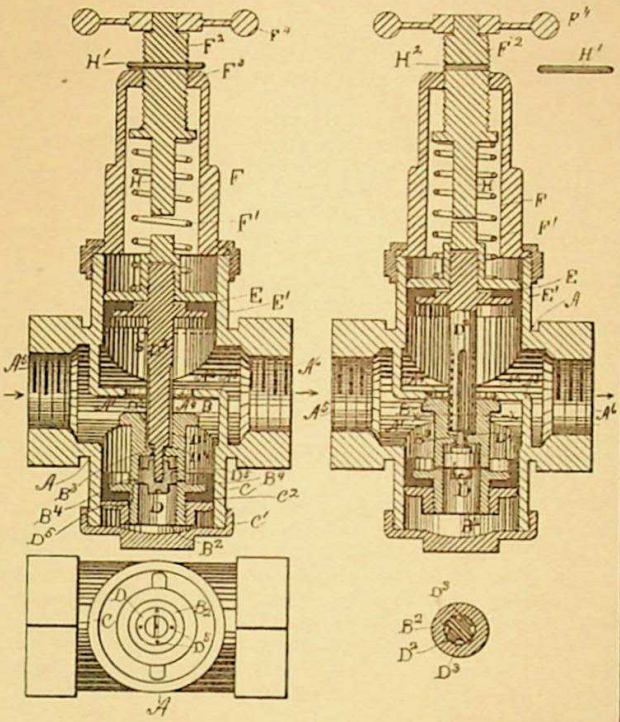
3. The combination, with the range-shelf having a hook C^2, of the herein-described collar B, provided with the recess or depression B', substantially as and for the purpose specified.

4. The combination of the top range-plate A and the collar B, provided upon said range-plate, with the shelf C, having the hook C^2, for engaging the range-plate, substantially as and for the purpose specified.

5. The combination of the top range-plate A, the collar B, provided upon said range-plate, the recess or depression B', provided in said collar, and an opening in the collar beneath said recess with the shelf C, and the hook C^2, provided upon the shelf for passing through the opening beneath the recess or depression B' and engaging the said range-plate, substantially as and for the purpose specified.

6. The combination of the top range-plate A with the shelf C, having the hook C^2, securing one side of the shelf to the said range-plate, and the shoulders *d*, provided on the opposite side of said shelf and secured to the said range-plate by bolts E, substantially as and for the purpose specified.

404,503. FLUID-PRESSURE REGULATOR. WILLIAM ROSS, Troy, N. Y. Filed Dec. 31, 1887. Serial No. 259,523. (No model.)



Claim.—1. A main-valve case having inlet and outlet chambers opening exteriorly and connected interiorly by a passage-way, in combination with the main valve controlling said passage-way, a connected valve-actuating piston and its cylinder closed at one end, the closed end being connected by runways with the inlet and outlet chambers, and a runway-regulating valve, operated substantially as described, and linked to the main valve, for the purpose of regulating one of said runways and at the same time affording means for communicating positive movements to the main valve, substantially as described, and for the purposes set forth.

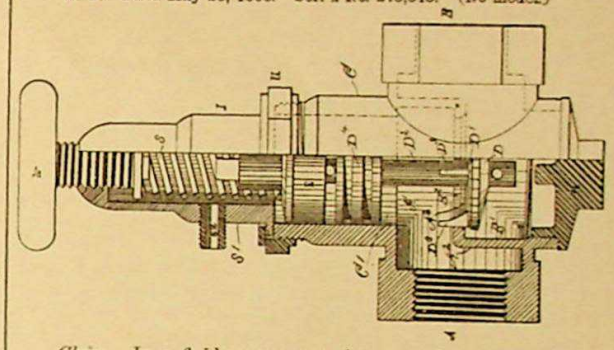
2. A main-valve case having inlet and outlet chambers opening exteriorly and connected interiorly by a passage-way, in combination with the main valve controlling said passage-way, a connected valve-actuating piston and its cylinder closed at one end, the closed end being connected by runways with the inlet and outlet chambers, a regulating-valve seat for each of said runways, and a regulating-valve located between said seats and common to both for the purpose of conversely and simultaneously controlling both of said runways, substantially as described, and for the purposes set forth.

3. A main-valve case having inlet and outlet chambers opening exteriorly and connected interiorly by a passage-way, in combination with the main valve controlling said passage-way, a connected valve-actuating piston and its cylinder opened at one end, the closed end being connected by runways with the inlet and outlet chambers, a regulating-valve seat located upon the main valve, and a regulating-valve connected with and actuated by a movable part of the outlet-chamber case, the movable part being arranged to yield in a direction to seat both valves to an excess of pressure above a predetermined amount in the outlet-chamber, substantially as described, and for the purposes set forth.

4. A main-valve case having inlet and outlet chambers opening exteriorly and connected interiorly by a passage-way, in combination with the main valve controlling said passage-way, a connected valve-actuating piston and its cylinder closed at one end, the closed end being connected by runways with the inlet and outlet chambers, a runway-regulating valve located within the main valve and provided with a stem projecting from a loosely-fitting aperture in the face of the main valve through the chamber-connecting passage-way to a support in the outlet-chamber, whereby the supporting-stem of the regulating-valve serves to guide the main valve to its seat, substantially as described.

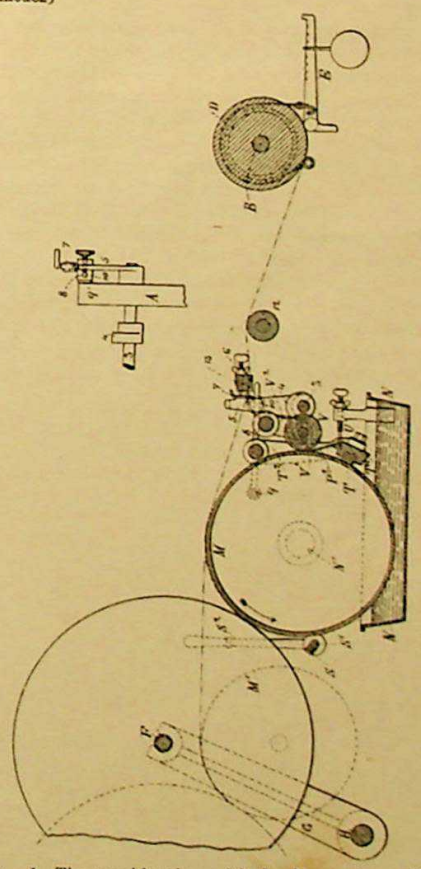
5. A main-valve case having inlet and outlet chambers opening exteriorly and connected interiorly by a passage-way, in combination with the main valve controlling said passage-way, a connected valve-actuating piston and its cylinder closed at one end, the closed end being connected by runways with the inlet and outlet chambers, a spring-inclosing chamber separated from the outlet-chamber by a movable spring-controlled bridge or section, a runway-regulating valve connected with the bridge, bridge-controlling spring, and spring-regulating screw fitting a threaded receiving-aperture opening out of the spring-chamber and provided with interiorly and outwardly projecting stems, the outward-projecting stem having a detachable stop for the purpose of changing a pressure-regulator from the control of a spring to the positive control of a screw, substantially as described.

404,504. FLUID-PRESSURE REGULATOR. WILLIAM ROSS, Troy, N. Y. Filed May 28, 1888. Serial No. 275,315. (No model.)



Claim.—In a fluid-pressure regulator, a valve-case having inlet and outlet chambers opening exteriorly and connected interiorly by a passage-way, in combination with a combined valve-seat and stop located at the junction of the passage-way and the outlet-chamber, a valve placed in the outlet-chamber and movable therein to and from said seat, a piston-cylinder, a piston-controlling spring, and two valve-actuating pistons connected by a common stem with the valve, one of the pistons fitting the cylinder more tightly than the other, and the cylinder-space between the pistons being connected with the outlet-chamber by a runway, substantially as described.

404,505. DAMPENING APPARATUS FOR ROLLS OF PAPER. WALTER SCOTT, Plainfield, N. J. Filed Oct. 15, 1888. Serial No. 288,071. (No model.)



Claim.—1. The combination, with the dampening-cylinder M and water-trough N, of the cross-bar or scraper T, holder T', and pivoted arms for supporting the holder, and means for regulating the proximity of the cross-bar T to the surface of the dampening-cylinder, substantially as set forth.

2. The combination, with the dampening-cylinder M and trough, the scraper T and holder T', of the elastic roller V and the hanging arms for the same, the cross-shaft 3, and cams and lever for applying more or less pressure of the elastic roller upon the dampening-cylinder, substantially as set forth.

3. The combination, with the dampening-cylinder M and trough, of the cross-bar or scraper T and holder, the elastic roller V and its supporting-links, and the shaft 3, cams and lever-handle, and deflecting-plate P^2, substantially as specified.

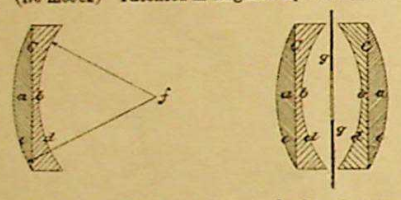
4. The lever-handle 5, swinging block 7, pivoted to the same, and the set-screw 6, in combination with the dampening-cylinder M, the cams 4, cross-shaft 3, elastic roller V, and the links V^2 by which the same is suspended, for applying pressure to the elastic roller V or relieving the same by moving the swinging block, substantially as set forth.

5. The combination, with the frame and the roll for the web of paper, and the roll upon which the dampened paper is wound, of the water-trough N, dampening-cylinder M, over which the paper passes, the grooved spreader 13, with which the web of paper passes in contact to the dampening-cylinder, and the driving-pulley for rotating the winding-cylinder, and the brake for stopping the same and arresting the movement of the paper, substantially as set forth.

6. The combination, with the rollers for the web of paper, of the dampening-cylinder and a water-trough for supplying the water, and an elastic roller and mechanism, substantially as specified, for pressing the same against the dampening-cylinder to remove the surplus water, substantially as specified.

7. The combination, with the rolls for the web of paper, of a water-trough and a dampening-cylinder receiving the water from the said trough, and an elastic roll for removing the surplus moisture, the said dampening-cylinder also acting to give motion to the roll of paper as the web is wound up, substantially as set forth.

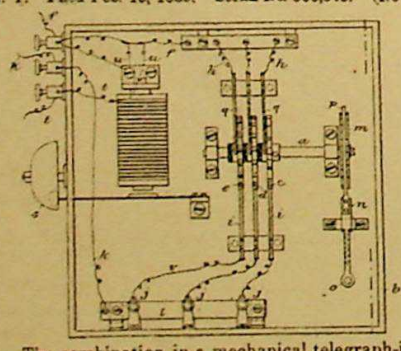
404,506. APLANATIC LENS. HEINRICH L. H. SCHRÖDER, 17 Althorp Road, Upper Tooting, County of Surrey, assignor to John Stuart, Clapham, County of Surrey, England. Filed Mar. 13, 1889. Serial No. 303,139. (No model.) Patented in England Apr. 7, 1888, No. 5,194.



Claim.—1. An aplanatic lens composed of a plano-convex lens and a plano-concave lens joined together, the convex surface of the lens having a longer radius than that of the concave surface, substantially as described.

2. An aplanatic lens or objective giving a positive image, said lens or objective being composed of a plano-convex lens made of high refractive power and low dispersive power, and a plano-concave lens made of glass of lower refractive power and as high or higher dispersive power, the convex surface of said lens or objective having a longer radius than the concave surface, substantially as described.

404,507. TELEGRAPH APPARATUS. EBENEZER B. SHAFER, New York, N. Y. Filed Feb. 18, 1889. Serial No. 300,375. (No model.)



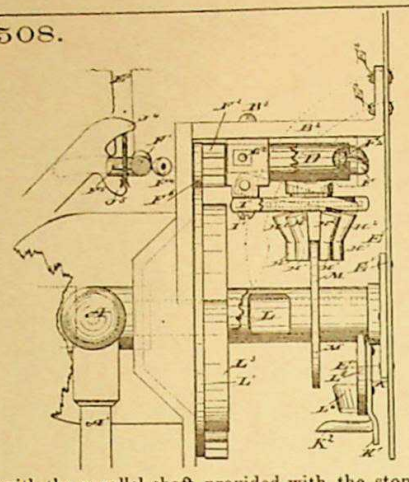
Claim.—The combination, in a mechanical telegraph-instrument, of the series of two or more contact-wheels keyed on but insulated from the carrying and operating shaft, the finger-pawl and ratchet-wheel for operating all the disks alike, the brushes and branch wire, and current-closing push-stud to each disk and separately connecting them in the circuit, substantially as described.

404,508. GRAIN-BINDER. OLE O. STORLE, Milwaukee, Wis., assignor of one-half to John H. Gordon, Rochester, N. Y. Filed Jan. 14, 1884. Serial No. 117,441. (No model.)

Claim.—1. The rotary knotter mounted in a stationary bearing and provided with the stop-pinion, in combination with the stop-motion gear engaging said pinion, the gear-shaft parallel with the axis of the knotter, and the stripper-arm secured to the gear-shaft and adapted, as shown, to extend beyond and sweep over the end of the knotter, and the knife secured to said stripper.

2. The rotary knotter provided with a stop-motion pinion, in combination with the parallel shaft provided with the stop-motion gear engaging the pinion, and with the stripper-arm adapted to extend across and sweep over the outer or under face of the knotter.

404,508.



3. The knotter provided with the stop-pinion, and adapted to form the knot by a revolution on its axis, and the cord-holder, all combined with the segment L^2, the arm K′, knife K^2, and rack L^5, all revolving on a common axis, substantially as described.

4. The combination, with the knotter-driving shaft A, of the knotter F and the revolving knife K^2, arranged on axes substantially parallel with each other and provided with the cord-holder disk H, located between the axes and operated by means of pinion H^2, having stop-teeth H′, tooth L^6, and notched flange M, revolving on the same axis with the knife, substantially as described.

5. The combination, with the knotter F and the revolving knife K^2, arranged on axes substantially parallel with each other, of the cord-holder disk H, placed between the knotter and the axis of the revolving knife and operated by means of the pinion H^2, and tooth L^6, revolving on the same axis with the knife, substantially as described.

6. The knotter, the breast-plate having the slot with the lateral extension E^4 to permit the discharge of the knot from the knotter, combined with the tucker having the supplemental finger J^5, substantially as described.

7. The knotter and its delay-pinion, in combination with a driving-gear L′, with the gear-segment and delay-surface to impart complete intermitting rotations to the knotter, the driving-gear shaft L, parallel with the axis of the tyer, the cord-holding disk with the series of peripheral notches therein, the disk-operating pinion H, and the pinion-extension H′, having the series of cross-slots therein, the rack-arm L^5, carried by shaft L and adapted to give partial rotation to the pinion and disk, and the notched disk M, also carried by the shaft L, whereby the differential rotations are imparted to the knotter and the disk.

8. The knotter-frame having the sleeve B′, the stud-bolt C, at a right angle thereto, the shaft A, having the gear A^8, the sleeve carrying the mechanism for giving motion to the parts, and the gear L^8, all combined substantially as described.

9. The knotter-frame and the breast-plate, combined with the connecting stud-bolt C, said bolt adapted to form an axis for the mechanism for moving the various parts, substantially as described.

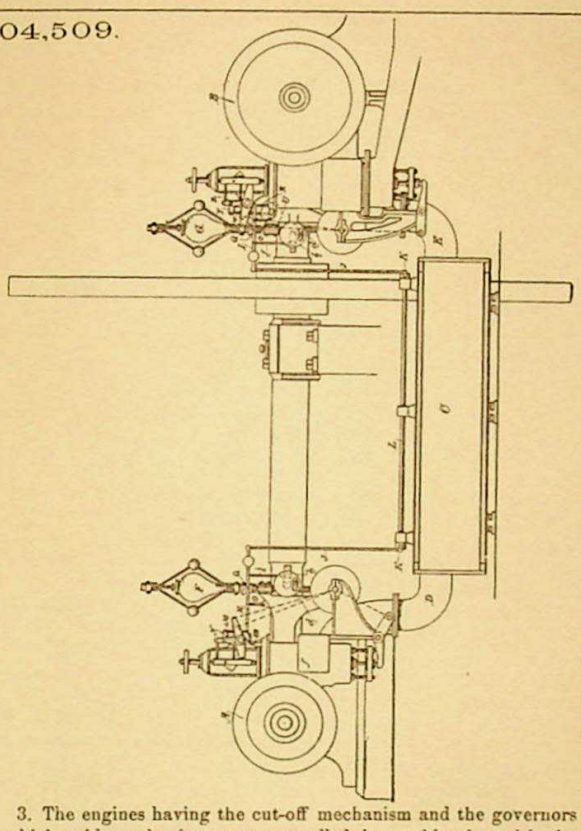
10. In combination with the rotary knotter and its stop-pinion and the adjacent cord-holder, a shaft parallel with the axis of the knotter, the knotter-driving pinion on said shaft, and the arm K, attached to said shaft, its outer end extended in the plane of rotation to sweep over the end of the knotter and strip the knot therefrom, and the knife secured to said arm at a distance from its end at substantially right angles to the plane of rotation, whereby it is adapted to pass between the knotter and holder.

404,509. VALVE-GEAR FOR COMPOUND ENGINES. JOHN C. H. STUT, San Francisco, Cal. Filed Dec. 28, 1888. Serial No. 294,865. (No model.)

Claim.—1. The initial and expansion cylinders, with their respective cut-off mechanisms and the governors by which said mechanisms are actuated, in combination with a connecting mechanism whereby said governors operate simultaneously and an oscillating link, together with a block adjustable in said link and connected with the cut-off mechanism of the expansion-engine, substantially as and for the purpose herein described.

2. The oscillating link connected with a lever which is moved by the action of the governors of the initial and of the expansion engines, a block fitted to said link and adjustable to either side of its center of oscillation, with a radius-rod connecting said block with the arm of the rocker-shaft, through which the cut-off mechanism of the engine is controlled, substantially as described.

404,509.



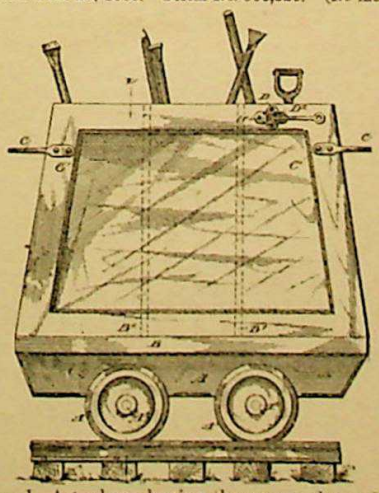
3. The engines having the cut-off mechanism and the governors by which said mechanisms are controlled, in combination with the mercury-air dash-pots by which the momentum of the governor is checked, substantially as described.

4. The dash-pot for checking the momentum of the governor, consisting of a circular hollow case mounted upon a horizontal shaft, a crank-arm connecting said shaft with a governor, a vertical partition separating the interior of said case, and a body of mercury partially filling said space and acting upon the confined bodies of air, substantially as described.

5. The mercury-air dash-pot for checking the momentum of the governors, consisting of a hollow case divided into two compartments by a vertical partition, the said compartments being partially filled with mercury, a connecting-pipe uniting the lower part of the compartments and having an adjusting cock or valve, said case being journaled upon a horizontal shaft and having an adjustable crank-arm, by which it is connected with the moving parts of the governor, so as to be oscillated from side to side, substantially as described.

6. The cut-off mechanisms of the initial and expansion cylinders of a compound engine, in combination with an intermediate mechanism whereby the cut-off of the expansion-cylinder is caused to take place either simultaneously with, later, or earlier than that of the initial cylinder, substantially as described.

404,510. TOOL-CAR FOR MINES. JOSEPH TREWEEK, Lead City, Dak. Filed Feb. 20, 1889. Serial No. 300,529. (No model.)



Claim.—1. A tool-car having the upper edges of its body disposed within the area of its bottom, substantially as specified.

2. A tool-car for mines, having inwardly-inclined side and end walls, substantially as specified.

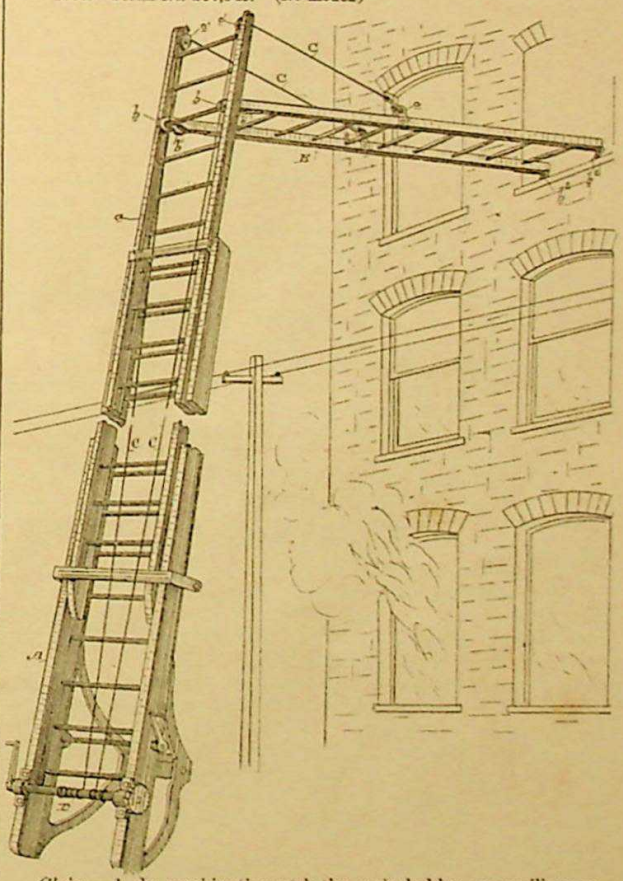
3. A tool-car for mines, consisting of inwardly-projecting side and end walls, the body thereof being divided into compartments for the reception of tools, substantially as specified.

4. A tool-car for mines and similar places, consisting of inwardly projecting side and end walls, the body thereof being divided into compartments, the opposite walls of which are inclined for the reception of tools, substantially as specified.

5. The combination, with a car for use in mines and similar places, consisting of the side and end walls projecting inwardly toward their top, divided into compartments for the reception of tools, of fastening-brackets at the sides thereof to hold the car on an elevator, substantially as specified.

6. The combination, in a car for carrying tools, consisting of the side and end walls projecting inwardly toward their top, of fastening-brackets at the sides thereof, and hand-holds at the ends for propelling the car backward and forward, substantially as specified.

404,511. ADJUSTABLE ATTACHMENT AND EXTENSION FOR FIRE-LADDERS. JAMES W. TULLY, San Francisco, Cal. Filed Oct. 8, 1888. Serial No. 287,545. (No model.)



Claim.—1. In combination with the main ladder, an auxiliary or supplementary ladder and bearing-hooks with protecting-springs attached to the auxiliary or supplementary ladder, whereby said ladder may be readily connected with the rounds of the main ladder and turned to any inclination, substantially as herein described.

2. In combination with the main ladder, a detachable auxiliary or supplementary ladder having bearing-hooks at one end, by which it is hinged to any of the rounds of the main ladder, the springs protecting the openings to the hooks, the ropes attached to the auxiliary or supplementary ladder and passing through sheaves on the main ladder, and a winding-drum or windlass at the foot of the main ladder, to which the ropes are attached, whereby the auxiliary or supplementary ladder may be extended from the main ladder and turned to any suitable inclination, substantially as herein described.

404,512. FEED-WATER HEATER. JONATHAN H. VAIL, New York, N. Y. Filed June 9, 1888. Serial No. 276,617. (No model.)

Claim.—1. The combination, with an exhaust-pipe, of a chamber surrounding a portion of the same wherein the feed-water is heated, a settling-chamber below said heating-chamber also surrounding the exhaust-pipe and receiving the heated water, and a chamber above said settling-chamber and connected therewith by tubes through which the clear hot water rises, substantially as set forth.

2. An exhaust-pipe having a number of small perforations in its

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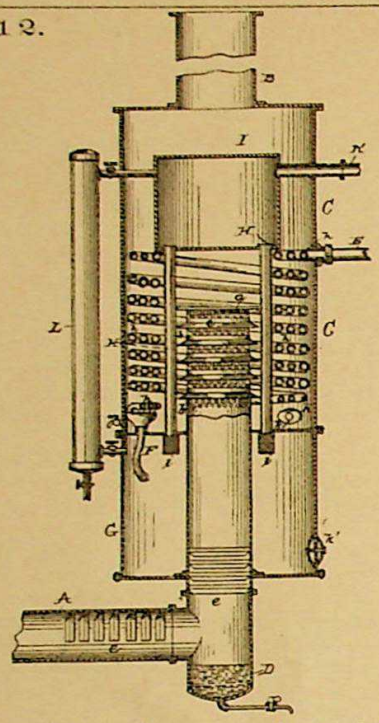


upper portion, and deflecting flanges above said perforations, in combination with a chamber surrounding said perforated portion, and an exit from such chamber, substantially as set forth.

3. The combination of an exhaust-pipe having a number of small perforations, a chamber surrounding the perforated portion of said pipe, and a coil of pipe in said chamber through which feed-water passes, substantially as set forth.

4. The combination of an exhaust-pipe, a chamber surrounding a portion of the same, a feed-water coil in said chamber, a settling-chamber connected with said coil and also surrounding a portion of the exhaust-pipe, and a clear-water chamber receiving the water from said settling-chamber, substantially as set forth.

5. The combination of an exhaust-pipe, a heating-chamber surrounding a portion of the same, an outlet from said pipe into said chamber, an exit-pipe leading from the top of said chamber, a settling-chamber surrounding the exhaust-pipe below said feeding-chamber with which said feed-water coil communicates, a clear-water chamber within the heating-chamber and communicating with the boiler, and tubes extending from said settling-chamber to said clear-water chamber, substantially as set forth.

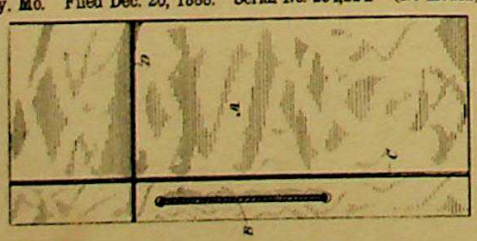
6. The combination of the settling-chamber, the clear-water chamber above the same, the scum-chamber, passages to said scum-chamber from near the top of said settling-chamber and of said clear-water chamber, and valves in said passages, substantially as set forth.

7. The combination, with a vertical exhaust-steam pipe, of annular downwardly-inclined flanges within the same, and a receptacle below said flanges for the water and oil which collect on said flanges, substantially as set forth.

8. The combination of an exhaust-pipe having a number of small perforations, a heating-chamber surrounding the perforated portion of said pipe, a coil of pipe in said chamber through which feed-water passes, a settling-chamber connected with said coil and also surrounding a portion of the exhaust-pipe, a clear-water chamber connected with said settling-chamber, and an exit from said heating-chamber, substantially as set forth.

9. The combination of the exhaust-pipe, the settling-chamber, the clear-water chamber receiving the purified water, and an annular passage around said clear-water chamber connected with said exhaust-pipe, whereby the exhaust-steam surrounds said clear-water chamber, substantially as set forth.

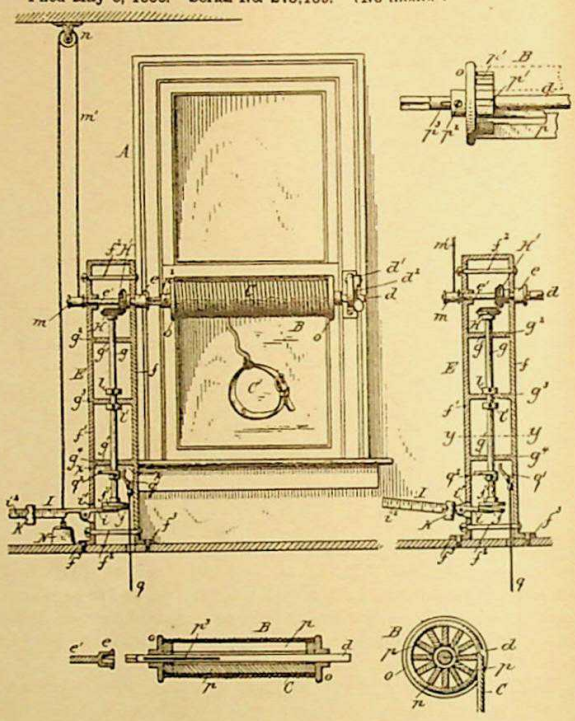
404,513. TEMPORARY BINDER. WILBUR F. WAKEMAN, Kansas City, Mo. Filed Dec. 20, 1888. Serial No. 294,224. (No model.)



Claim.—1. The herein-described binder one of the covers of which is provided with a longitudinal joint and a transverse joint, substantially as set forth.

2. The combination, with a series of coupon-slips, of a binder for securing the slips together and for protecting them, one of the covers of said binder having a joint extending longitudinally thereof and a joint extending transversely thereof, whereby the right-hand portion of the coupon-slip may be exposed throughout its length without disclosing the left-hand portion, and whereby the top of the slip may be disclosed without disclosing the lower portion, substantially as set forth.

404,514. FIRE-ESCAPE. GEORGE W. WORDEN, Lewiston, N. Y. Filed May 8, 1888. Serial No. 273,189. (No model.)



Claim.—1. In a fire-escape, the combination, with a horizontal drum, of a friction-disk, connecting mechanism whereby the rotary motion of the drum is transmitted to the friction-disk, and a weighted lever bearing directly against said friction-disk for retarding the motion of the same, substantially as set forth.

2. The combination, with a horizontal drum, of a vertical shaft geared with said drum and provided with a friction-disk, and a weighted lever bearing against said friction-disk, substantially as set forth.

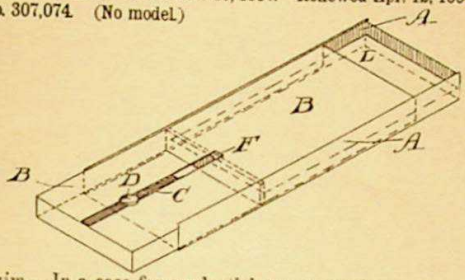
3. The combination, with a horizontal drum, of a gear-wheel mounted on said drum, a vertically-movable shaft provided with a gear-wheel meshing with the gear-wheel of the drum and having a friction-disk, and a lever bearing against said friction-disk, and provided with a movable counterpoise, whereby the pressure of the lever against said friction-disk may be regulated, substantially as set forth.

4. The combination, with the window-frame, the casing E, and the horizontal shaft e', mounted in said casing and provided with a bevel-wheel H′ and at one end with a square or flat-sided socket e, of the removable drum B, having a shaft provided with a flat-sided end adapted to enter the socket e and formed at its opposite end to fit a hook-shaped bearing d', secured to the window-frame, a vertical shaft g, having a bevel-wheel H, meshing with the wheel H′, a friction-disk j'', secured to said shaft, and a weighted lever I, provided with a friction-disk j, bearing against the disk j', substantially as set forth.

5. The combination, with the rope C, the horizontal main drum B, and its shaft provided with the gear-wheel H′, of the vertically-movable shaft g, provided with a gear-wheel H, meshing with the gear-wheel H′ and with a friction-disk j', a lever I, provided at its inner end with a friction-disk j, bearing against the disk j', a counterpoise k, arranged upon the lever I, an auxiliary drum m, mounted on the shaft of the main drum, and a rope m', wound upon the auxiliary drum in an opposite direction to the rope C, attached to the main drum and provided with a weight N, whereby the rope C is automatically rewound upon the drum after being unwound, substantially as set forth.

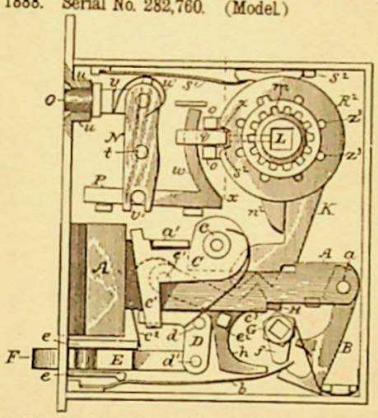
6. In a fire-escape, the drum B, composed of hub-disks o, having radial grooves p', and removable radial slats or bars p, arranged in said grooves, substantially as set forth.

404,515. CARD OR TICKET CASE. ALEXANDER ALLEN, Toronto, Ontario, Canada. Filed Feb. 18, 1887. Renewed Apr. 12, 1889. Serial No. 307,074. (No model.)



Claim.—In a case for cards, tickets, or envelopes, the combination of knob D, sliding plate C, and the plate K, having the spring-strips cut and arranged substantially as described.

404,516. LOCK. ALVIN S. BOICE, New Richland, Minn. Filed Aug. 15, 1888. Serial No. 282,760. (Model.)



Claim.—1. In combination with the lock-bolt, a pivoted catch adapted to connect with said bolt when retracted, a loose trigger constructed to project through the face-plate of the lock and to be pressed inward, a sliding bar in position to engage with said trigger, and a suitable device connecting said bar with said catch, by which the said bolt may be released, substantially as set forth and described.

2. The combination, with the main bolt, of a lever connected therewith and provided with a spring which is adapted to thrust forward said bolt, a pivoted catch adapted to detain said bolt when retracted, a sliding bar, a loose trigger constructed to project through the face-plate of the lock, to be pressed inward, and to engage said sliding bar, and a pivoted angular lever which is loosely connected with said catch and the sliding bar, substantially as set forth and described.

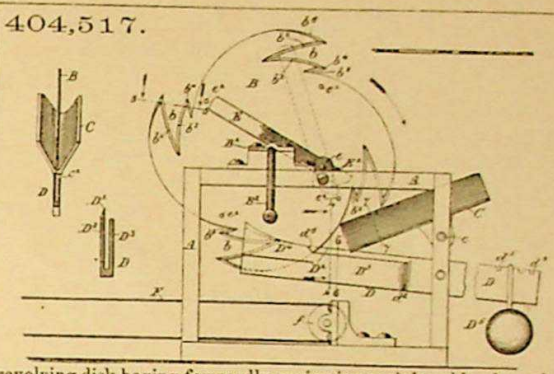
3. The combination, with the main bolt provided with a shoulder c^3, of a pivoted catch H, provided with a stud c^2 in position to connect with said bolt, a spring-lever adapted to drive said bolt, and a rotative plug G, provided with an arm and adapted to engage said pivoted catch and said spring-lever successively, substantially as set forth and described.

4. In a lock, in combination with the knob-spindle, a circular plug fitting on said spindle and provided with a nipple *m* and an aperture *p*, a plate M, provided with an annular flange fitting around the said plug and provided with an aperture, with which the aperture *p* may be brought in line, a pin supported in position to enter said apertures and provided with means for projecting and withdrawing it, a series of notched tumblers adapted for engagement with said plug and said pin, a lock-bolt, a pivoted catch constructed to lock said bolt after it is driven forward, and a lever K, constructed to engage with plate M and with said pivoted catch, substantially as set forth and described.

5. In combination with the lock-case having an aperture in its face-plate, a push-button, a pivoted spring-lever connected with said button, a movable bar which is loosely connected with said lever and is provided with a curved arm *w*, a combination-pin which is movably connected with said curved arm, a knob-spindle provided with a perforated plug, and plate M, adapted for connection with said plug by means of said pin, substantially as and for the purposes described.

6. In combination with the knob-spindle, the rotative plug L, fitting thereon and provided with a nipple *m*, the notched ring T, with projection z^4, and a series of tumblers adapted to be engaged by said ring, substantially as set forth and described.

404,517. FRUIT-STONING MACHINE. JOHN S. BRIGGS and WILLIS E. LEACH, San Buenaventura, Cal. Filed Dec. 4, 1888. Serial No. 292,587. (No model.)



Claim.—1. A machine for the purpose described, comprising a revolving disk having forwardly-projecting peripheral hooks or knives and a knife or cutter yieldingly supported and moving in a plane parallel with the disk and in contact with the periphery of the latter, substantially as described.

2. A machine for the purpose stated, comprising a revolving cutting-disk having forwardly-projecting peripheral hooks or knives, a knife yieldingly supported and moving in a plane parallel with the disk and in contact with the periphery of the latter, and a movable inclined trough or guide for feeding the fruit to the disk and knife, substantially as described.

3. A machine for the purpose stated, comprising a revolving disk having forwardly-projecting peripheral hooks or knives, a knife yieldingly supported and moving in a plane parallel with the disk and in contact with the periphery of the latter, and divergent spreaders located at opposite sides of the disk adjacent to the end of the knife, substantially as described.

4. A machine for the purpose stated, comprising a revolving disk having forwardly-projecting peripheral hooks or knives, a knife yieldingly supported adjacent to the periphery of the disk, and yieldingly-supported parallel pit-guides arranged at opposite sides of the disk and adjacent to the said knife, substantially as described.

5. A machine for the purpose stated, comprising a revolving disk provided with forwardly-projecting peripheral hooks or knives, a knife yieldingly supported and moving in a plane parallel with the disk and in contact with the periphery of the latter, yieldingly-supported parallel pit-guides located adjacent to and at opposite sides of the periphery of the disk, and divergent spreaders located adjacent to and outside of the pit-guides, substantially as described.

6. A machine for the purpose stated, comprising a revolving disk having forwardly-projecting peripheral hooks or knives, a knife yieldingly supported adjacent to the periphery of the disk, and a movable feed-trough having its end nearest the knife sustained in position for operation by and movable with the latter, substantially as described.

7. A machine for the purpose stated, comprising a revolving disk having forwardly-projecting peripheral hooks or knives, a knife yieldingly supported adjacent to the periphery of the disk, and a weighted lever carrying said knife, substantially as described.

8. A machine for the purpose stated, comprising a revolving disk having forwardly-projecting peripheral hooks or knives, a knife yieldingly supported adjacent to the periphery of the disk, yieldingly-supported pit-guides located at opposite sides of the periphery of the disk, and a weighted lever sustaining said knife and pit-guides, substantially as described.

9. A machine for the purpose stated, comprising a revolving disk having forwardly-projecting peripheral hooks or knives, a knife yieldingly supported adjacent to the periphery of the disk, yieldingly-supported pit-guides arranged at opposite sides of the periphery of the disk, yieldingly-supported divergent spreaders arranged at opposite sides of the said pit-guides, and a weighted lever supporting said knife, pit-guides, and spreaders, substantially as described.

10. A machine for the purpose stated, comprising a revolving disk having forwardly-projecting peripheral hooks or knives and sharpened points b^4, a knife yieldingly supported adjacent to the periphery of the disk, and a guide-trough, substantially as described.

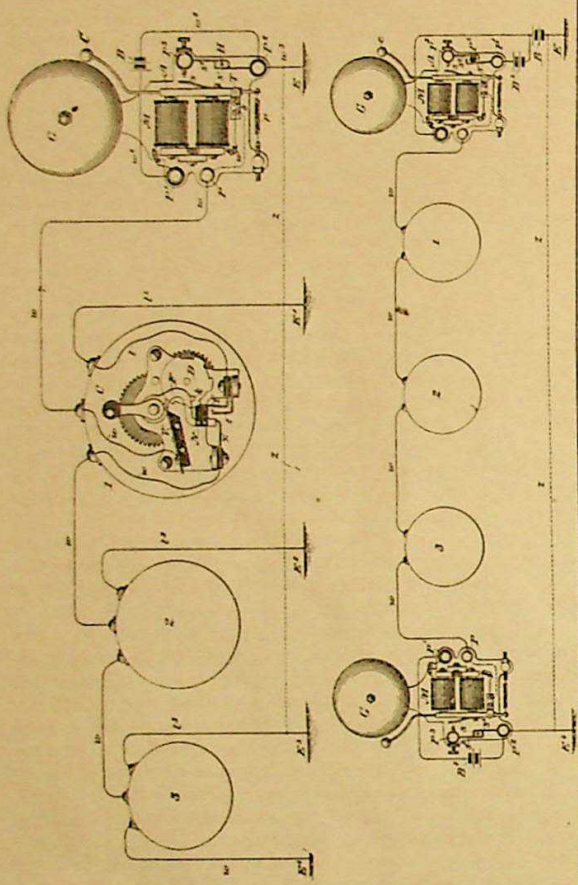
11. A machine for the purpose stated, comprising a revolving disk provided with forwardly-projecting peripheral hooks or knives, a knife yieldingly supported adjacent to the periphery of the disk, and a V-shaped inclined feed-trough having its sides arranged at an acute angle with each other, substantially as described.

12. A machine for the purpose stated, comprising a revolving disk having forwardly-projecting peripheral hooks or knives, a knife yieldingly supported adjacent to the periphery of the disk, a feed-trough, and a movable knocker for dislodging pits or stones from the said disk, substantially as described.

13. A machine for the purpose stated, comprising a revolving disk having forwardly-projecting peripheral hooks or knives, a knife yieldingly supported adjacent to the periphery of the disk, and spread-

ers for separating the halves of the fruit, one of said spreaders being continuous with the yielding knife and the other having a blunt edge adjacent to the knife adapted to enter the cut made by the knife, substantially as described.

404,518. FIRE-ALARM TELEGRAPH. SIDNEY A. CHASE, Evart, Mich., assignor of one-half to William R. Mapes, same place. Filed May 24, 1888. Serial No. 274,892. (No model.)



Claim.—1. In a fire-alarm system, a trembler-bell having an electro-magnet included in the main-line circuit, the armature of which carries a contact-spring adapted to contact with a circuit-closer on its back contact, in combination with two circuit-closing springs connecting such back contact with the battery through a local circuit, said circuit-closing springs being provided with a plug for separating them electrically, substantially as described.

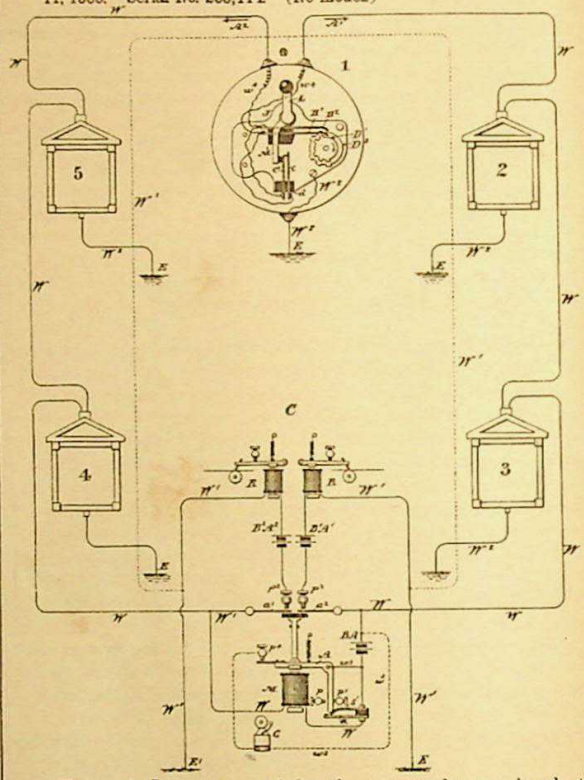
2. In a fire-alarm or signal system, a normally-closed conductor earthed at each end, one or more outlying signal or alarm stations having signaling mechanism, a vibratory electro-magnetic bell and battery located at the fire-alarm station, both connected directly in the main circuit with double circuit-connections, and a secondary circuit having a normally-closed contact between the back contact of the armature and the main circuit provided with an insulating-pin for electrically disconnecting the normally-closed contacts, whereby when a signal is transmitted the current generated from the main battery flows over the secondary circuit and vibratory impulse-signals are received, and when the main line is broken the normally-closed contacts may be opened electrically, substantially as described.

3. In a fire-alarm or analogous system, a vibratory electro-magnetic bell having an electro-magnet, the coils of which are connected in a closed main-line circuit, the armature having a contact-spring adapted to contact with a circuit-closer on its back contact, in combination with two contact-springs located between the back contact of the armature of the electro-magnet and the main circuit connecting the back contact electrically with the main battery through a secondary circuit, said contact-springs being provided with an insulating-pin for separating them, substantially as described.

4. In a fire-alarm system, a trembler-bell having an electro-magnet with double circuit-connections, the coils of the electro-magnet being included in the main-line circuit, the armature of the electro-magnet carrying a contact-spring adapted to contact with a circuit-closer on its back contact in electrical connection with two normally-closed contact-springs connecting the back contact with the battery, including the coils of the electro-magnet through a secondary circuit, said contact-springs being provided with an insulating-pin for separating them electrically, substantially as described.

5. In a fire-alarm system, the combination of two electro-magnetic vibrating gongs connected in a normally-closed main circuit, said gongs having double circuit-connections and a secondary circuit including electro-magnet, armature, and poles of a divided main-line battery, the secondary circuits having normally-closed contacts between the back contact of the armature and main circuit provided with an insulating-pin for electrically disconnecting the normally-closed contacts electrically, substantially as described.

404,519. DUPLEX FIRE-TELEGRAPH. SIDNEY A. CHASE, Evart, Mich., assignor of one-half to William R. Mapes, same place. Filed Sept. 11, 1888. Serial No. 285,114. (No model.)



Claim.—1. In a system of fire-alarm or analogous signals, the combination of a two-way transmitter composed of two signal-disks having a character-signal on each disk and contact-springs, with a normally-closed circuit shunting the transmitter and including in its circuit a circuit-closer and an electro-magnet located at a signal-receiving station, the circuit-closer being held closed by the armature of the magnet, and one or more normally-open signal-receiving circuits, including one or more signal-receiving instruments, the contact making and breaking devices representing the characteristic signals being located on the same side of the disks, so that both signals are transmitted simultaneously, or so that the signal is sent in by whichever of the two lines remains intact, substantially as described.

2. A signal-transmitter for use in a duplex system of fire or analogous signals, consisting of three disks, two of which have a definite signal on the same side of their periphery, the third having constant metallic contact with an earth-circuit, while the others are connected by individual contact-springs and normally-open main-line circuits running by diverse routes to a receiving-station, said main lines including receiving-instruments, substantially as described.

3. A signal-transmitter for use in duplex fire or analogous systems of signals, consisting of a mechanically-impelled motor geared to a signal-wheel composed of two signal-disks having two characteristic signals—one on each disk—and located between the same radial portions of said disks, in combination with two main-line circuits running by diverse routes to a signal-receiving station, and a shunt around said transmitter, including a circuit-breaker normally held closed by an arm connected to the motor-shaft, substantially as described.

4. In a duplex fire, police, or analogous system of signals, the combination of the following elements: two receiving-instruments located in normally-open earth-circuits at a signal-receiving station, and independent all-metallic circuit including one or more outlying signal-boxes and an electro-magnet and circuit-closer held closed by the armature of said magnet, a two-way signal-transmitter in each box connected to a normally-open earth-circuit, and a shunt around said signal-transmitter held normally closed by a motor which propels the signal-transmitter, the latter having its duplicate signals in the same radial position, so that as it rotates duplicate signals are sent by diverse routes, substantially as described.

5. A signal-transmitter for use in a duplex fire or analogous signaling system, composed of two circuit-breakers each adapted to give the same signal at the same time, in combination with two independent circuits running in diverse directions to a receiving-station and two independent receiving-instruments, one located in each of said circuits at the receiving-station, the transmitter having a constant connection to earth and the receivers being located in normally-open earth-circuits, substantially as described.

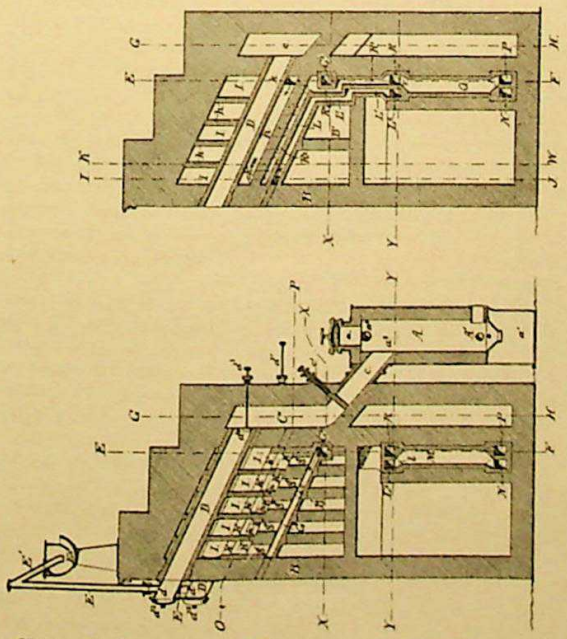
6. A signal-transmitter for use in a duplex system of fire, police, or analogous signals, consisting of two disks which have each a definite signal located on the same side of its periphery, having constant electric connection with an earth-circuit, and having open-circuit independent contact-springs, and circuit-connections branching to closed main-line circuits running by diverse routes to a receiving-station, said main line containing receiving-instruments, substantially as described.

7. In a non-interfering fire, police, or analogous signaling system, a duplex signal-transmitter composed of two duplicate signaling-disks each having the same characteristic signal located on the same radial portion of its circumference, in combination with normally-open circuit signaling contact-springs and circuit-connections, an earth-circuit disk having a continually-closed ground-circuit connection, an automatic circuit-changer at the receiving-station, having earth-circuits and normally-open circuit-connections, whereby duplicate signals may be sent simultaneously to the receiving-station in opposite directions at every revolution of the signaling-circuit disks, substantially as described.

8. A signal-transmitter for use in a duplex fire, police, or analogous system of signals, consisting of a mechanically-impelled motor geared to a signal-wheel composed of two signaling-disks having duplicate signals on the same radial portions of their circumferences and continuous electric connection with an earth-circuit, in combination with independent normally-open circuit signaling contact-springs and circuit-connections connected to opposite sides of a normally-closed shunt-circuit closer, connected in a metallic circuit shunting the transmitter, said circuit running to a central station, including an electro-magnetic circuit-changer and armature, and contacts and connections which connect independent earth-circuits, including receiving-instruments, whereby duplicate signals are transmitted simultaneously, substantially as described.

9. In a duplex fire, police, or analogous signaling system, the combination of the following elements: a main all-wire closed metallic circuit W, normally-open receiving earth-circuits W′, transmitter ground-circuits W^2, with a series of duplex transmitters normally shunted out of the main circuit, but connected continually to earth-circuits, said transmitters composed of duplicate signaling-disks and continuity-preserving disks with definite signals located on the same radial portions of the circumferences of the transmitters, substantially as described.

404,520. APPARATUS FOR MANUFACTURING GAS. WALTON CLARK, Philadelphia, Pa., assignor to the United Gas Improvement Company, same place. Filed Oct. 26, 1888. Serial No. 289,199. (No model.)



Claim.—1. In an apparatus for manufacturing gas, the combination of a generator provided with air-blast and steam pipes, a set of retorts arranged above the generator, a chamber into which the retorts open freely at one end, a passage extending from said chamber downwardly into the generator, gas-pipes leading from the ends of the retorts opposite to those opening into the chamber aforesaid, combustion-chambers arranged externally around the retorts, said retorts being closed with respect to the combustion-chambers, a flue system leading from the generator into said combustion-chambers, an air-flue system also leading into the combustion-chambers, and valves in the inclined passage and flue leading from the generator, whereby both can be opened or closed at will, all as and for the purpose specified.

2. In an apparatus for manufacturing gas, the combination of a generator provided with air-blast and steam pipes, a set of inclined retorts arranged above the generator, a chamber into which the retorts open freely at one end, a passage extending from said chamber downwardly into the generator, gas-pipes leading from the ends of the retorts opposite to those opening into the chamber aforesaid, combustion-chambers arranged externally around the retorts, said retorts being closed with respect to the combustion-chamber, an independent flue system leading from the generator into said combustion-chambers, an air-flue system also leading into the combustion-chambers, and valves in the inclined passage and flue leading from the generator, whereby both can be opened or closed at will, all as and for the purpose specified.

3. In an apparatus for manufacturing gas, the combination of a generator provided with air-blast and steam-pipes, a set of retorts arranged above the generator, a chamber into which the retorts open freely at one end, a passage extending from said chamber downwardly into the generator, gas-pipes leading from the ends of the retorts opposite to those opening into the chamber aforesaid, combustion-chambers arranged externally around the retorts, said retorts being closed with respect to the combustion-chambers, an independent flue system leading from the generator into said combustion-chambers, an air-flue system also leading into the combustion-chambers, a flue system leading from the combustion-chambers to the stack arranged to heat the air-flue system, and valves in the inclined passage and flue leading from the generator, whereby both can be opened or closed at will, all as and for the purpose specified.

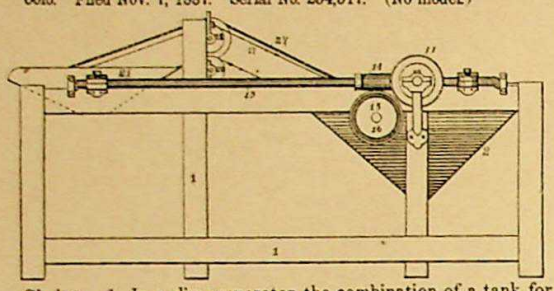
4. In an apparatus for manufacturing gas, the combination of two independent generators provided with air-blast and steam pipes, two sets of retorts arranged above the generators, two chambers, one for each set of retorts, into which said retorts open freely at one end, a passage leading downward from each chamber to the top of one of the generators, so as to connect each independent chamber with one of the generators, gas-pipes leading from each retort at the end opposite to that opening into the chambers aforesaid, combustion-chambers arranged externally around each set of retorts, said retorts being closed with respect to the combustion-chambers, an independent flue system consisting of separate and independent flues leading from each generator to a common flue-connection with both sets of combustion-chambers, air-flues also leading into the combustion-chambers, valves arranged to close the passage leading from the generators to the chambers into which the retorts open, and valves arranged to close each of the passages leading from the generators to the common flue aforesaid.

5. In an apparatus for manufacturing gas, the combination of two independent generators provided with air-blast and steam pipes, two sets of inclined retorts arranged above the generators, two chambers, one for each set of retorts, into which said retorts open freely at their lower ends, a passage leading downward from each chamber to the top of one of the generators, so as to connect each independent chamber with one of the generators, gas-pipes leading from each retort at their upper ends, combustion-chambers arranged externally around each set of retorts, said retorts being closed with respect to the combustion-chambers, a flue system consisting of independent flues leading from each generator to a common flue having connection with both sets of combustion-chambers, air-flues also leading into the combustion-chambers, valves arranged to close the passages leading from the generators to the chambers into which the retorts open, and valves arranged to close each of the passages leading from the generators to the common flue aforesaid.

6. In an apparatus for manufacturing gas, the combination of two independent generators provided with air-blast and steam pipes, two sets of inclined retorts arranged above the generators, two chambers, one for each set of retorts, into which said retorts open freely at their lower ends, a passage leading downward from each chamber to the top of one of the generators, so as to connect each independent chamber with one of the generators, gas-pipes leading from each retort at their upper ends, combustion-chambers arranged externally around each set of retorts, said retorts being closed with respect to the combustion-chambers, a flue system consisting of independent flues leading from each generator to a common flue having connection with both sets of combustion-chambers, air-flues also leading into the combustion-chambers, a flue system leading from the combustion-chambers arranged in close contact with the air-flue system, so as to heat the entering air, valves arranged to close the passages leading from

the generators to the chambers into which the retorts open, and valves arranged to close each of the passages leading from the generators to the common flue aforesaid.

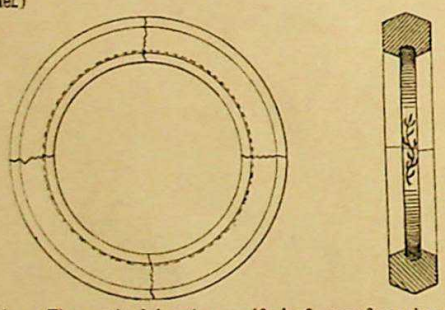
404,521. SLIME-SEPARATOR. PATRICK H. DUNAGAN, Denver, Colo. Filed Nov. 7, 1887. Serial No. 254,517. (No model.)



Claim.—1. In a slime-separator, the combination of a tank for receiving the pulverized material and water, a second and independent tank for receiving the floats or slimes, a porous rough-surfaced belt dipping just below the water-line in the first tank to lift the slimes from the surface of the water, thence inclining upwardly and then downwardly to the slime-receptacle, rollers over which the belt passes at either end, central rollers in a higher position than the end rollers, and the means for communicating motion thereto, substantially as described.

2. In a slime-separator, the combination of a tank for receiving the pulverized material and water, a second and independent tank for receiving the slimes, a porous rough-surfaced belt dipping just below the water-line in the first tank to lift the slimes from the surface of the water, thence inclining upwardly and then downwardly to the slime-receptacle, rollers over which the belt passes at either end, central rollers in a higher position than the end rollers, and means for imparting to the end rollers both a rotary and a longitudinally-reciprocating motion, substantially as described.

404,522. METHOD OF MAKING RING-DIES. FREDERIC ECAUBERT, Brooklyn, N. Y. Filed Nov. 5, 1888. Serial No. 289,972. (No model.)



Claim.—The method herein specified of manufacturing annular dies, consisting in finishing up the ring of soft steel with the necessary contour, engraving, or ornamentation upon the interior surface thereof, hardening the said ring, and afterward breaking the ring apart into two or more sections adapted to being placed together for use or removed from the article that is rolled or otherwise formed to shape within such ring-shaped die, substantially as set forth.

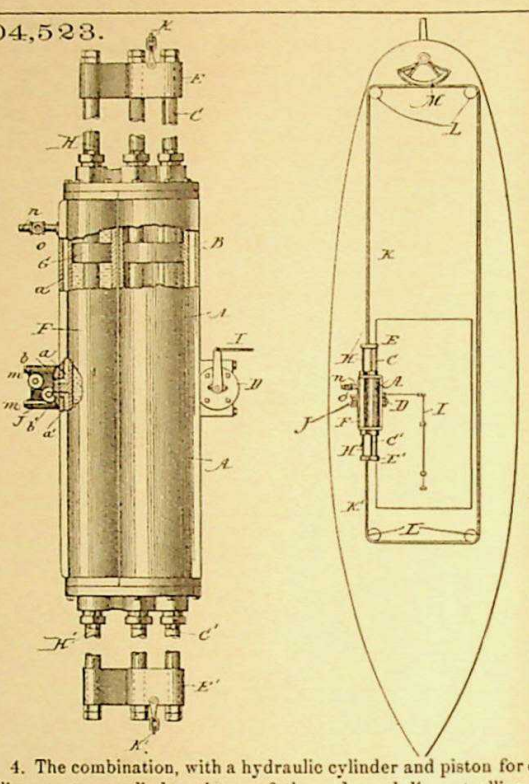
404,523. HYDRAULIC CYLINDER FOR CONTROLLING STEAM-CYLINDERS. CHARLES F. ELMES, Chicago, Ill. Filed Jan. 24, 1889. Serial No. 297,470. (No model.)

Claim.—1. The combination, with a hydraulic cylinder and piston for controlling the movements of a steam-cylinder piston, of valves located between the hydraulic cylinder ends operated in their movements solely by fluid-pressure, substantially as shown and described.

2. The combination, with the steam-cylinder and its piston, of a hydraulic cylinder having ports *a a'*, leading from its ends, a valve-chest J', having the opposite ports *b b'*, communicating, respectively, with said hydraulic cylinder ports, the vertical passages *c c'*, rising, respectively, from the said valve-chest ports, the vertically-movable valves *d d'*, controlling said passages, the springs *f f'*, for closing the valves, the horizontal passages *k k'*, leading from the valve-spaces *j j'*, and the vertical passages *l l'*, leading, respectively, from said horizontal passages to the valve-chest ports *b b'*, substantially as described.

3. The combination, with a hydraulic cylinder and piston for controlling a steam-cylinder piston, of the valve-chest J, having the vertically-movable spring-closed valves *d d'*, provided with stems *f f'*, and the adjusting-screws *i i'*, operated from the exterior of the valve-chest and tapped therethrough to vary the height to which the valves and their stems rise, and thereby control the volume of liquid flowing through the valve-chest, substantially as described.

404,523.

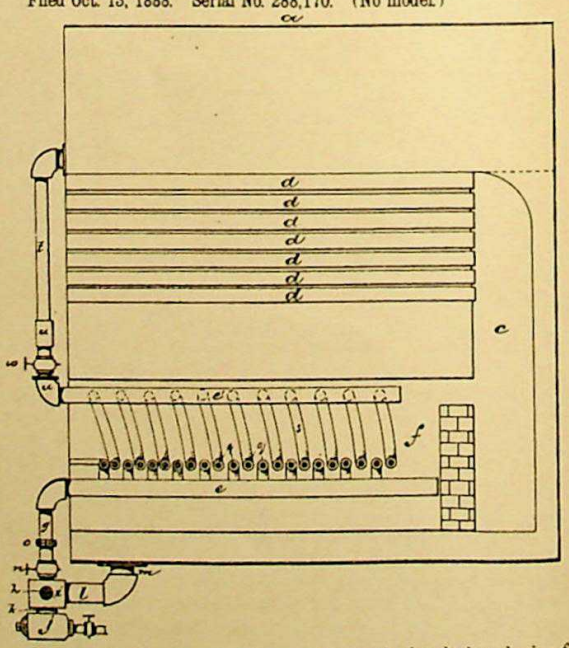


4. The combination, with a hydraulic cylinder and piston for controlling a steam-cylinder piston, of the valves *d d'*, controlling the liquid passage-way between the ends of the hydraulic cylinder, and the adjusting-screws *i i'*, movable in the valve-chest to and from the stems of said valves to vary their extent of movement and thereby control the volume of liquid flowing through the valve-chest, substantially as specified.

5. The combination, with the hydraulic cylinder F, having the passages or ports *a a'*, of the hydraulic chest J, having the ports *b b'*, passages *c c'*, valves *d d'*, and passages *k k'* and *l l'*, substantially as specified.

6. The combination, with the hydraulic cylinder F, adapted to control a steam-cylinder piston, of the pump-connecting pipe *n* and check-valve *o*, substantially as and for the purpose specified.

404,524. STEAM-GENERATOR. JOSEPH A. ENO, Newark, N. J. Filed Oct. 13, 1888. Serial No. 288,170. (No model.)



Claim.—1. The improved generating and circulating device for boilers, containing therein longitudinal pipes *e e*, supporting grate-bars *q*, and generating-pipes *p*, the latter being connected to a pipe *c'*, supply-pipes *g*, and return-pipes *t*, adapted to convey the water from the bottom of the boiler to said generating-pipes and from thence to return the same to the boiler, substantially as and for the purposes set forth.

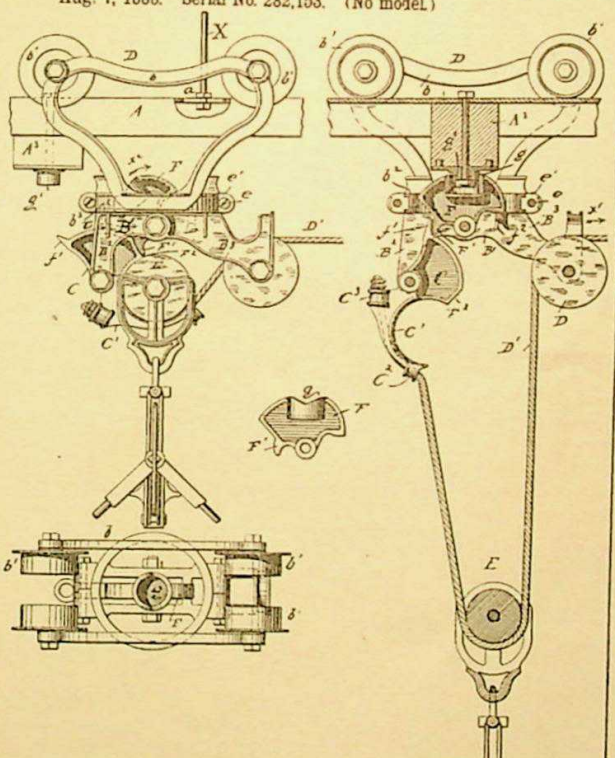
2. In combination with a boiler *a*, having a furnace *b*, longitudinal pipes *e e e'*, connecting-pipes *p'*, curved and conforming to the fire-chamber, jointed supply-pipes *g*, connecting with the bottom of the boiler, and jointed pipes *t*, connecting with the body of the boiler, all said parts being arranged and combined substantially as and for the purposes set forth.

3. In combination with the body of the boiler, pipes *e e*, generating-pipes bent to form a grate *q* and bent upward to connect with a pipe *e'*, lying at the top of fire-chamber, and said pipe *e'* and pipes *g* and *t* at the front of the boiler and connecting with the bottom and top thereof, respectively, and valved and jointed, substantially as and for the purposes set forth.

4. In combination with a boiler and suitable supply and return pipes, longitudinal pipes *e e* and *e'*, and generating-pipes *p*, extending from said pipes *e* upward and over the fire-chamber to the pipe *e'*, and being bent, as at *r*, to facilitate the movement of the water in the pipe *e'*, substantially as and for the purposes set forth.

5. In combination with a main boiler, the improved steam-generator combining therein jointed pipes *g* and *t*, connecting, respectively, with the bottom and top of the boiler, longitudinal pipes *e e* and *e'*, generating-pipes *p*, bent to form gratings *q* and connecting with said pipes *e e* and *e'*, all substantially as and for the purposes set forth.

404,525. HAY-CARRIER. JOHN FARRELL, Huntsville, N. J. Filed Aug. 7, 1888. Serial No. 282,153. (No model.)



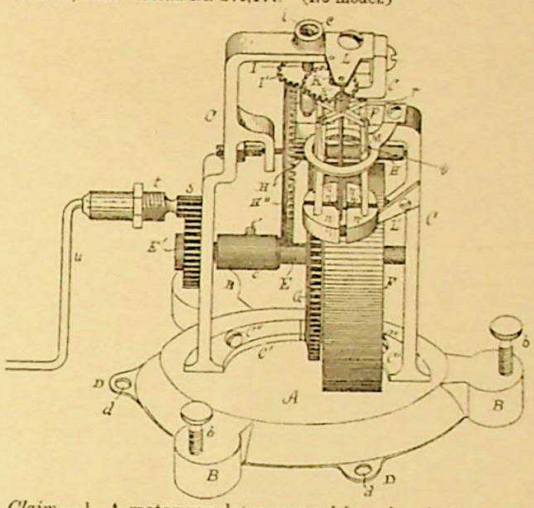
Claim.—1. In a hay-carrier, the combination of a carriage having a lower swiveled portion, a latch pivoted to said swiveled portion at the center of the same, and a locking-lever provided with an arc-shaped upper part having a stop at one end and an inclined portion at the other end, and with an arm at the lower end, substantially as set forth.

2. The combination, in a hay-carrier, with a track, of a carriage provided with a lower swiveled part, a latch pivoted centrally to said swiveled part and provided with a socket, a fixed stop on the track for engaging said socket, a fulcrumed locking-lever pivoted to the lower movable part of the carriage and provided with an arc-shaped upper part having a stop at one end and an inclined portion at the other end, and a guide-pulley for the fork-supporting rope, substantially as set forth.

3. The combination, in a hay-carrier, of a traveling carriage having a lower swiveled part provided with a fixed transverse stop, a latch pivoted centrally to said swiveled part and provided with a socket and with a stop at one end, a locking-lever provided with an arc-shaped upper part and a stop, a rope attached to the locking-lever, a traveling guide-pulley for the fork, and a pulley at the opposite end of the lower swiveled part, substantially as set forth.

4. The combination, in a hay-carrier, of a carriage having a lower swiveled part, a latch pivoted centrally to said swiveled lower part and provided in its top with a socket having its top edges inclined from two diametrically-opposite points in the longitudinal plane of the latch to two diametrically-opposite points on the transverse line of the latch, a track on which the carriage runs, a stop on said track, which stop can enter the socket on the latch, and a pivoted locking-lever that can be engaged and locked in place by the above-mentioned latch, substantially as set forth.

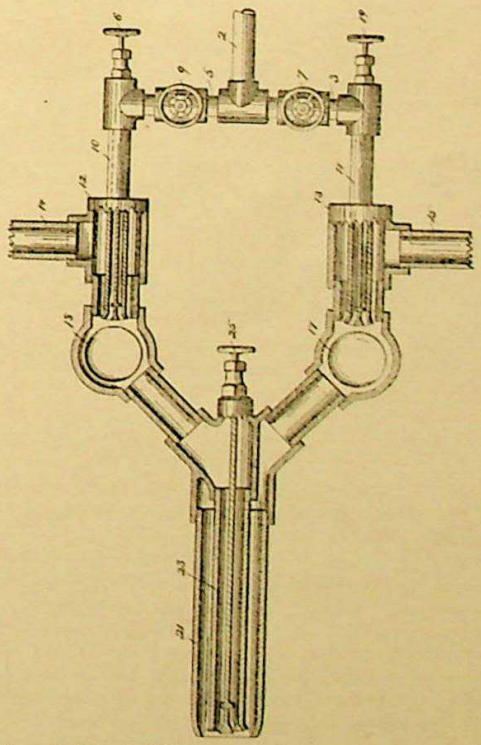
404,526. SPRING-MOTOR. ROBERT FARIES, Decatur, Ill. Filed June 6, 1888. Serial No. 276,177. (No model.)



Claim.—1. A motor-regulator comprising the shaft *q*, carrying cross-head *p*, rods *n*, suspended vertically from the cross-head, and annular band M, encircling the rods below their points of suspension, as set forth.

2. A motor-regulator comprising the shaft *q*, carrying cross-head *p*, rods *n*, suspended vertically from the cross-head and having weights *n'*, and annular band M, encircling the rods below their points of suspension, as set forth.

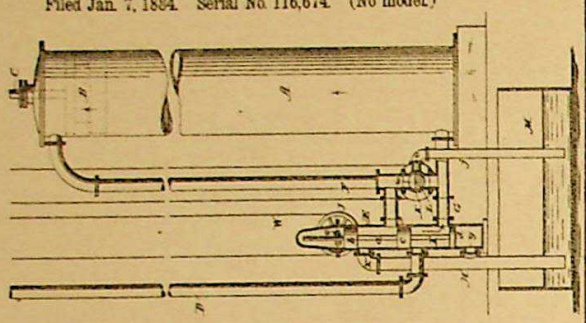
404,527. COMPOUND HYDROCARBON-GAS GENERATOR. ROBERT FERGUSON, St. Paul, Minn. Filed Jan. 25, 1889. Serial No. 297,587. (No model.)



Claim.—1. The combination, with the burner-pipes 21 and 23, of the receivers 17 and 18, connected with said pipes, the oil and steam pipes connected with one of said receivers and the oil and hot-air pipe connected with the other receiver, substantially as described, and for the purpose set forth.

2. The hydrocarbon-burner, comprising, in combination, the burner-pipe 21 and 23, the receivers 17 and 18, connected with said pipes, the oil-pipes connecting with said receivers, the steam-pipes surrounding one of said oil-pipes and connecting with the receiver, and the hot-air pipe surrounding the other oil-pipe and connected with the receiver, substantially as described.

404,528. HYDRAULIC ENGINE. CHARLES E. FOSTER, Washington, D. C., assignor to The Hydraulic Elevator Company, Chicago, Ill. Filed Jan. 7, 1884. Serial No. 116,674. (No model.)



Claim.—1. In a hydraulic engine, a cylinder, a piston therein, a main-valve device opening and closing communication between the cylinder and its supply, and pipes connecting said main-valve device with the cylinder at opposit ends, in combination with a passage to permit circulation between said latter pipes independent of the main-valve device, a valve to close said passage, and connections between said valve and the elevator-cage, substantially as described.

2. A hydraulic engine provided with a cylinder, piston, circulating, supply, and discharge pipes, and stopping and starting valve device, whereby the water circulates while the supply is cut off from the cylinder, and with a supplemental-valve device and communication between the same and a tank, and with connections between said supplemental-valve device and the cage, whereby at the will of the operator in the cage to establish and cut off communication independent of the main-valve device between the circulating-pipes and the tank, substantially as described.

3. A cylinder, a piston operating therein, main valve and casing, and circulating-pipes F and G, to connect the opposite ends of said cylinder with the main-valve chamber, in combination with a circulating-pipe K, connecting said pipes F and G, a pipe connecting said circulating-pipe K with a water-tank, and a valve arranged in said pipe K to open or close communication between the circulating-pipes F and G and between the circulating-pipe K and the pipe connected thereto, substantially as described.

4. The combination, in a hydraulic engine, of the cylinder, its piston and rod, and its supply and discharge pipes and their operating-valves with a circulating pipe or channel, a supply and receiving tank in communication therewith, and a valve to control said communication independent of the main-valve device, substantially as described.

5. A cylinder, a piston operating therein, circulating-pipes F and G, connecting said cylinder with the main-valve chamber, and a valve in said chamber to close communication with the supply in circulating, in combination with a circulating-pipe K, interposed between said pipes F and G, and having a valve, and a communication with a tank independent of the main discharge-pipe, and means, substantially as described, to operate said valve from the cage, substantially as and for the purpose specified.

6. The combination, with the cylinder, the piston head and rod, the supply, discharge, and circulating pipes or channels and their controlling-valves of a double-acting hydraulic engine, of a supply and receiving tank communicating with the circulating pipe or channel through an opening controlled by a supplemental valve independent of said main valve, and means, substantially as described, to operate said supplemental valve, as and for the purpose specified.

7. A cylinder, a piston operating therein, and circulating-pipes F and G, connecting the opposite ends of said cylinder with the main supply and discharge pipes, in combination with a circulating-pipe K, connecting said pipes F and G, a water-tank in communication with said pipe K, and a valve device adapted to simultaneously open or close communication between the circulating-pipes F and G and said pipe K and the water-tank, substantially as described.

8. In a hydraulic engine, a main supply-pipe, a valve-chamber communicating therewith, and pipes F and G, connecting said valve-chamber with the opposite ends, respectively, of a cylinder, in combination with a pipe or channel between said pipes F and G, a receiving and supply tank separate from the main supply, a pipe or channel forming a communication between said tank and the circulating-pipe, and a valve adapted to simultaneously open or close communication between the pipes F and G and pipe K and tank, substantially as described.

9. The combination of the cylinder, piston, and piston-rod, pipes F G, valve-case communicating with the water-supply channel and provided with a valve, pipe connecting the pipes G and F and valve in said pipe, supply and receiving tank, and connections between the platform and the valves, whereby both may be operated from the platform, substantially as set forth.

10. The combination of the cylinder, its piston and piston-rod, and circulating-pipes having a valve, and the supply-tank, with a case containing the main valve and provided with two discharge-ports and an intermediate port connecting with the supply-pipe, substantially as described.

11. The combination, with the hydraulic engine and its circulating-pipes, of a main valve controlling the supply to and discharge from the cylinder, a supply and receiving tank, and an independent valve controlling communication therewith, and mechanism, substantially as described, to hold one of said valves in stationary position while the other is being operated, as and for the purpose specified.

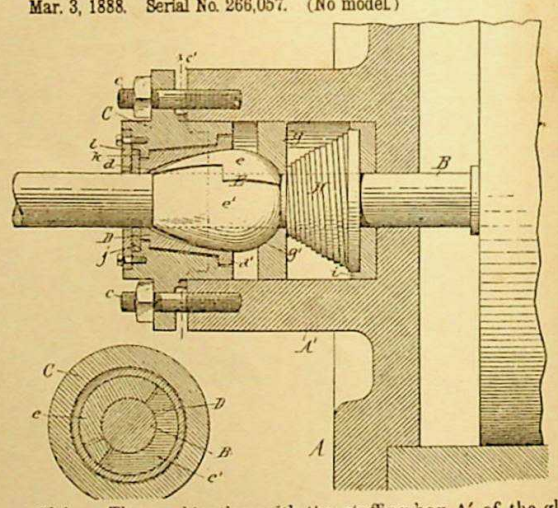
12. In a hydraulic engine, the combination, with an independent valve to control communication through the circulating-pipe thereof, and a notched disk, and a locking-lever, of mechanism, substantially as described, to operate said disk and lever to hold said valve in fixed position, as and for the purpose specified.

13. The combination, with the main valve and its toothed operating-pulley, and the independent valve of the circulating-pipe, of a locking-bolt and lever controlled by said independent valve, substantially as described.

14. The combination, with the main valve, its toothed operating-pulley, and a bolt adapted to engage therewith, of a lever adapted to engage and hold a valve within the circulating-pipe in stationary position when the main valve is being operated, substantially as described.

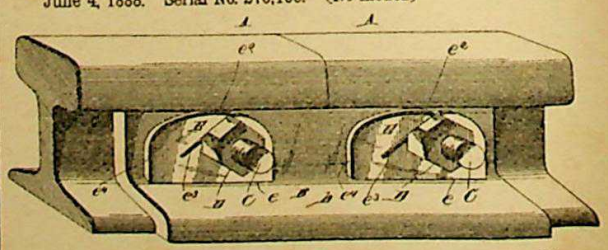
15. The combination, with the main valve, its toothed operating-pulley, and a bolt adapted to engage therewith, of an independent valve within the circulating-pipe, a notched disk secured to said independent valve, a locking-lever to engage said disk, and means, substantially as described, to move said lever into and out of engagement with said disk, as and for the purpose specified.

404,529. STUFFING-BOX. LOUIS C. S. FRICK, Buffalo, N. Y. Filed Mar. 3, 1888. Serial No. 266,057. (No model.)



Claim.—The combination, with the stuffing-box A', of the gland C, provided with a tapering cavity, the tapering bushing loosely fitting all around its sides in said cavity so as to leave an annular space, the flange *d'*, the shoulder *k*, the oval-shaped packing E, fitting in an oval cavity in the bushing so as to leave a space *d* between the two, and the ring *l*, loosely fitting around the piston, whereby provision is made for the settlement of the piston by wear, so as to preserve the fit of all the parts, substantially as set forth.

404,530. NUT-LOCK. GEORGE P. FULLER, Minneapolis, Minn. Filed June 4, 1888. Serial No. 276,160. (No model.)



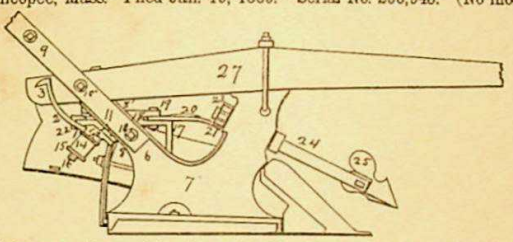
Claim.—1. A locking-plate for single nuts, constructed of heavy spring metal adapted to be secured beneath a nut to be locked and having an elongated end provided with a kerf-slit, forming a spring-tongue designed to engage the side of a nut, said elongated end being entirely free of any connection so as to be capable of springing outward upon depression of the tongue, substantially as and for the purpose described.

2. A locking-plate for single nuts, constructed of heavy spring

metal adapted to be secured beneath a nut to be locked and having an elongated end located on one side of the nut and entirely free of any connection, and provided with a spring-tongue and capable of springing out upon depression of the tongue, said tongue being rounded off, whereby the elongated end is enabled to spring out with greater ease and readiness, substantially as and for the purpose described.

3. A locking-plate to lock single nuts made of heavy spring metal and provided with an opening so as to enable the plate to fit snugly on the bolt between the nut and the fish-plate, said plate being provided with a long slot extending at an angle less than a right angle to the nut, which slot extends nearly (more or less) half-way down the plate so as to form a tongue or lip, the end of which is turned outward from the point where the nut first touches the tongue, and the end of the plate on that side where the tongue is located being extended or elongated and left free of any connection, for the purpose set forth.

404,531. SWIVEL-PLOW. ANDREW GALE and EUCHER TREMBLAY, Chicopee, Mass. Filed Jan. 19, 1889. Serial No. 296,943. (No model.)

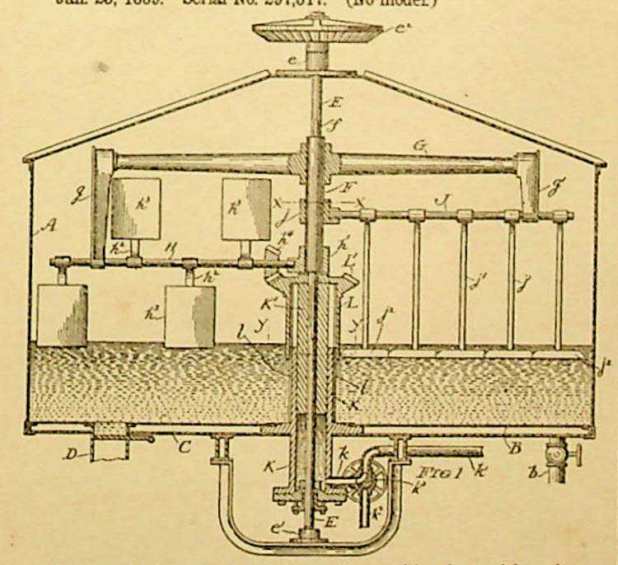


Claim.—1. In combination with the standard and mold-board of a reversible plow, the foot-latch having slotted plate 4, the slotted standard projection 17, the pivoted lever 20, pinion 23, and the jointer-arbor, substantially as shown and described.

2. The combination, with the reversible mold-board, of the plow-standard having the lug 11, the lock-plate 12, the foot-latch 1, the spring 14, and bolt 16, substantially as shown and described.

3. The foot-latch having the slotted plate 4 and its actuating mechanism upon the plow-standard, lever 20, having rack 21, and pin 22, in combination with the jointer 25, rotating stem 24, and pinion 23, substantially as shown and described

404,532. MASH-MACHINE. ROBERT GARICH, Chicago, Ill. Filed Jan. 23, 1889. Serial No. 297,317. (No model.)



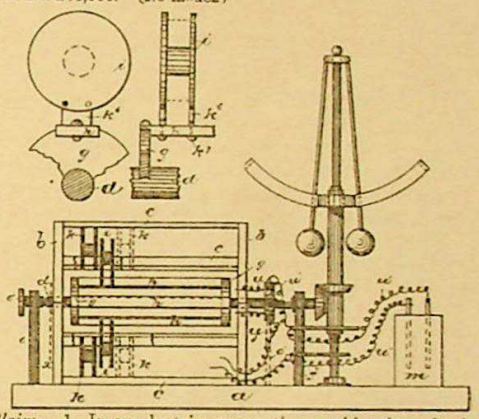
Claim.—1. In a mash-machine, the combination, with agitators arranged to rotate upon vertical and horizontal axes, respectively, of a single driving-shaft, a cylinder and piston in operative connection with said agitators and shaft, and means for lowering and raising said piston by hydraulic power, whereby said agitators may be positively and simultaneously rotated upon vertical and horizontal axes, respectively, and raised and lowered while in operation, substantially as shown and described.

2. In a mash-machine, the combination of a cylinder and piston, means for reciprocating said piston, a vertical shaft passing through the axis of said cylinder and piston, a non-rotating gear connected with said piston, a sliding sleeve splined to said shaft above said piston, a horizontal shaft radiating from said vertical shaft and having shovels thereon and a gear arranged to mesh into said non-rotating gear, a secondary radial shaft having scrapers depending from it, and means for driving said vertical shaft, substantially as shown and described.

3. The combination, in a mash-machine, of a vertical driving-shaft, a source of power, a sleeve loosely splined to said shaft, agitators, substantially as specified, attached to said sleeve, a cylinder and piston in operative connection with said sleeve, and means for actuating said cylinder, substantially as specified.

4. The combination, in a mash-machine, of a tub, vertical shaft E, a sleeve loosely splined thereon, arm G, having depending part g, horizontal shaft H, a hydraulic cylinder and piston, means for admitting water thereto, non-revolving gear L, in operative connection with said piston, and gear h^4 in engagement therewith.

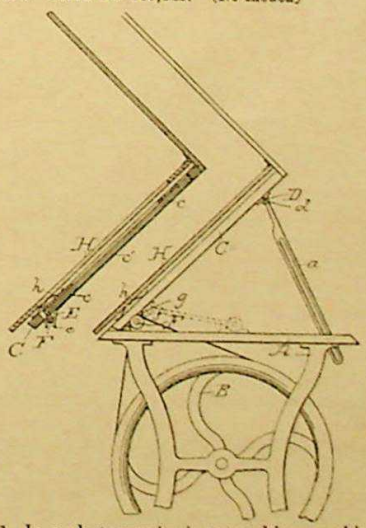
404,533. ELECTRIC MOTOR AND REGULATOR. ALFRED GARTNER, Newark, N. J., assignor, by mesne assignments, to the Continental Motor and Electrical Company, same place. Filed July 5, 1888. Serial No. 278,993. (No model.)



Claim.—1. In an electric motor, the combination of a frame and series of magnets secured therein, a shaft and a series of magnets secured thereon, the said magnets of one series alternating with those of the other series, and all of said magnets each having two end plates k k', with a hub k^2 and wires k^3 between, all said parts being arranged and combined substantially as and for the purposes set forth.

2. In a motor, the combination, with a series of magnets having broad end plates with wires wound between, of another series of like construction, movable between the first, the plates of one series being presented to those of the other, substantially as and for the purposes set forth.

404,534. PHOTOGRAPHER'S RETOUCHING-MACHINE. LAURA O. GIRVIN and JOHN LOFF, Chicago, Ill. Filed Apr. 18, 1887. Renewed Oct. 29, 1888. Serial No. 289,843. (No model.)



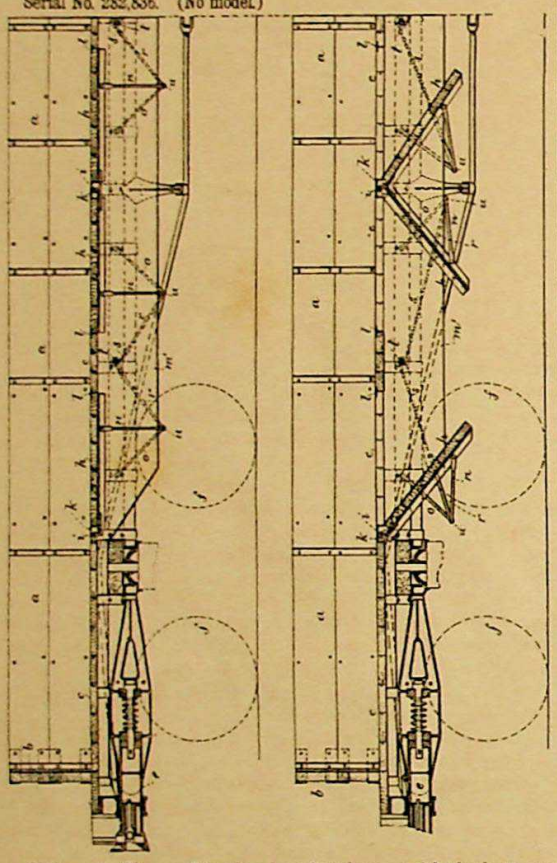
Claim.—1. In a photographer's retouching-machine, the combination, with a rectangular frame, of an independent oscillating vibratory negative-plate holder and means for actuating the same, as and for the purpose set forth.

2. In a photographer's retouching-machine, the combination, with a rectangular frame and plate-holder, of transverse shaft suitably journaled in said rectangular frame having eccentrics G, lug E, secured to the back of the plate-holder and having elongated bearings through which the eccentrics G pass, and means for operating said shaft, as set forth.

3. In a photographer's retouching-machine, the combination, with the rectangular frame C, independent vibratory negative-plate holder, and means for actuating the same, of a stationary hand-rest corresponding in transverse construction to and hinged to said rectangular frame, as and for the purpose set forth.

4. In a photographer's retouching-machine, the combination, with the rectangular frame C, vibratory negative-plate holder *c*, and adjustable pivotal screws D, of the transverse shaft F, journaled in bearings secured to frame C, and having eccentrics G, lugs E, having vertically-elongated bearings for said eccentrics G, pulley *f*, and drive-wheel B, as set forth.

404,535. CAR-BODY. JAMES T. GOODFELLOW, Huntingdon, Pa., assignor to the Iron Car Company, of Connecticut. Filed Aug. 16, 1888. Serial No. 282,836. (No model.)



Claim.—1. The combination, in a freight-car, with the bottom *c*, of hinged doors *h*, connected to and, when closed, forming a portion of the level and even bottom of said car, and with mechanism, substantially as described, for dropping said doors to discharge the contents of the car, and for raising said doors and supporting them in place, substantially as set forth.

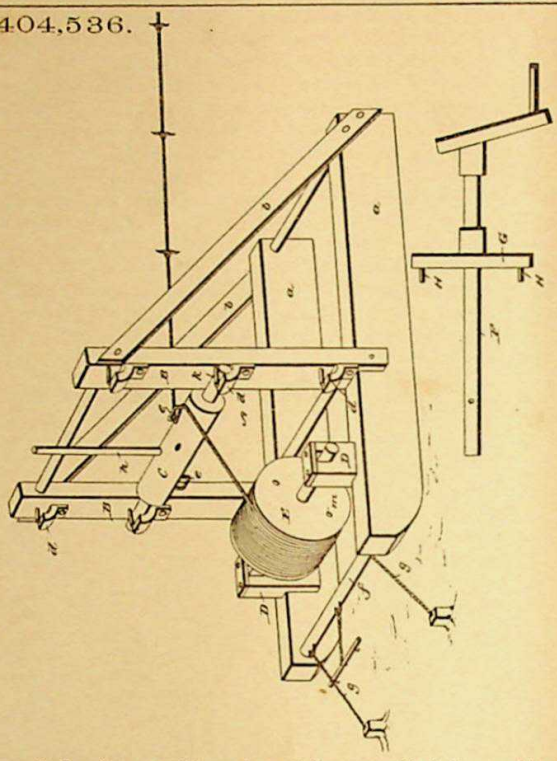
2. The combination, in a freight-car, with the bottom *c*, of the hinged doors *h*, connected to and, when closed, forming a portion of the bottom of said car, the strut-links *n*, connected at one end to the hinged doors, the tensile links *o*, connected at one end to the car-body, the shaft *u*, to which the other ends of the links *n* and *o* are pivoted, and operating-links *r*, connected at one end to the shafts *u*, the chains *s*, and cross-shafts *t*, by which the hinged doors are supported and operated, substantially as and for the purposes set forth.

3. The combination, in a freight-car, with the bottom *c*, of the hinged doors *k*, connected to and, when closed, forming a portion of the bottom of said car, the strut-links *n*, connected at one end to the hinged doors *k*, the tensile links *o*, connected at one end to the car-body, the shaft *u*, to which the other ends of the links *n* and *o* are pivoted, and operating-links *r*, connected at one end to the shafts *u*, the chains *s*, and cross-shafts *t*, by which the hinged doors are supported and operated, and the angle-iron bars *k l*, connected to the bottom of the car and at two or more opposite edges of the hinged doors, substantially as and for the purposes set forth.

404,536. WIRE-STRETCHER. ELIJAH GUTHRIDGE, Fayette, Mo. Filed Feb. 28, 1889. Serial No. 301,485. (No model.)

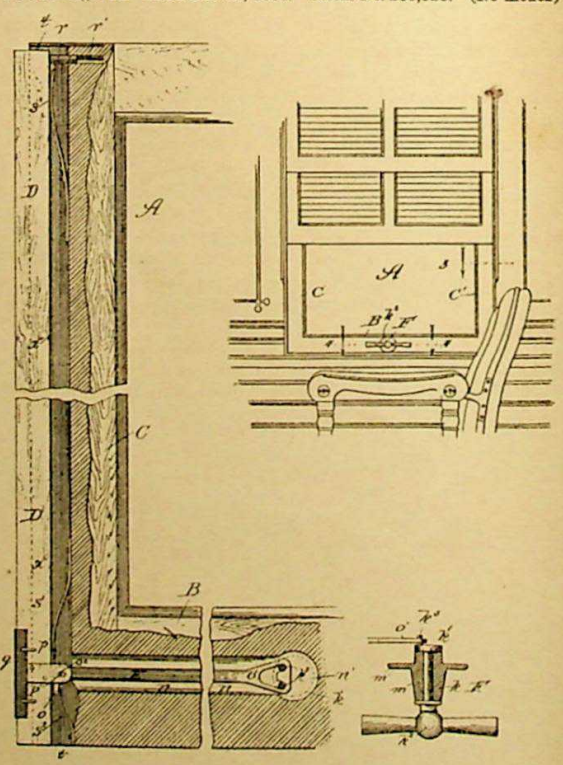
Claim.—1. The main frame composed of the runners *a* and cross-braces, in combination with the bearings D, secured to the runners, the standards B, also secured to the runners, the brackets *d*, secured to the forward sides of the standards, as shown, the spool journaled in the bearings D, the diagonal bars bracing the standards for the runners, and the tension-roll having lever-apertures to receive the removable levers, and also having staples or hooks for engaging the wire, one of said hooks being arranged near each end of a tension-roll, and the said roll being adapted to be placed in the brackets at different altitudes, substantially as specified.

404,536.



2. In a fence-machine, substantially as specified, the combination, with the main frame, of the standards having bearings, and the tension-roll having a staple near opposite ends to engage the wires, whereby the machine may be worked from the right or left hand side of a fence, substantially as specified.

404,537. SASH-HOLDER. OSCAR P. HAMMARLUND and EMIL LARSON, Chicago, Ill. Filed Oct. 30, 1888. Serial No. 289,523. (No model.)

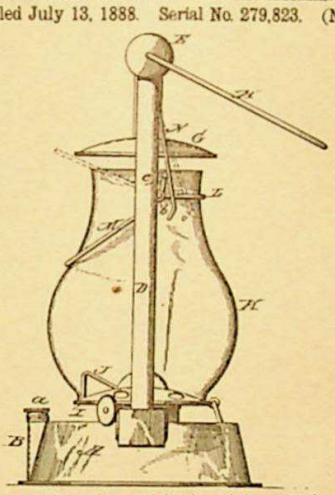


Claim.—1. In combination with a window, a strip D on a lateral edge of the window-sash to bear against the widow-casing, and provided on its outer surface toward one end with a projection *q*, a resilient medium maintaining the strip normally beyond the lateral edge of the window, with force sufficient to sustain the window at any adjusted height by the engagement of the projection *q* with the adjacent surface of the window-casing, a handle F, affording a window-lift located toward the middle of a horizontal rail of the window and connected with the strip D near the projection *q*, substantially as described.

2. In combination with a window, a strip D at the lateral edge thereof to bear against the window-casing, a resilient medium maintaining the strip normally beyond the lateral edge of the window, a rod E, loosely connected with the strip to afford lost motion, a spring maintaining the rod E normally at the limit of its outward movement, and a handle connected with the said rod and operative to retract the rod and with it the strip, substantially as described.

3. In combination with a window, a strip D at the lateral edge thereof to bear against the window-casing, a resilient medium maintaining the strip normally beyond the lateral edge of the window, a rod E, loosely connected toward one end with the strip to afford lost motion, a spring s^3, maintaining the rod E normally at the limit of its outward movement, a yoke o' on the opposite end of the rod E, and a handle F, carrying pins k^3, engaging with the yoke o', and operative, when turned in either direction, to retract the rod E and with it the strip D, substantially as described.

404,538. TUBULAR LANTERN. ROBERT HERMANCE, Schuylersville, N. Y. Filed July 13, 1888. Serial No. 279,823. (No model.)



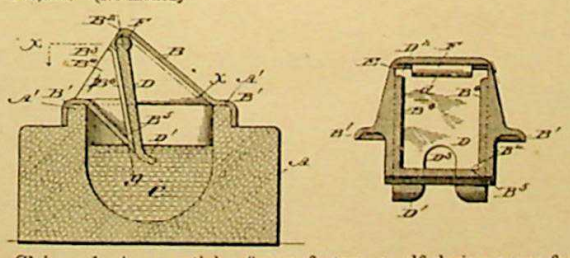
Claim.—1. The combination, with the globe of a lantern, of the rest I and the guide J, connected at one end to the top of said rest, with the other end inclined toward the center of the rest, substantially as and for the purpose specified.

2. In a lantern, the combination, with the globe-rest thereof, of a wire attached at one end to the top of said rest near its periphery, and comprising a substantially vertical portion forming a stop and a radial portion forming a guide and extending toward the center of the rest, substantially as shown and described.

3. In a lantern, the combination, with the guard L, of the pivoted yoke M, terminating in a finger or bearing extension, and the spring N, substantially as and for the purpose specified.

4. In a lantern, the combination, with a guard for the globe and a yoke pivoted thereto, of a spring bearing upon the end of the yoke to retain it in a raised or lowered position, substantially as and for the purpose set forth.

404,539. SELF-CLOSING COVER FOR INKSTANDS, &c. ISAAC W. HEYSINGER, Philadelphia, Pa. Filed June 16, 1888. Serial No. 277,329. (No model.)



Claim.—1. As an article of manufacture, a self-closing cover for ink-wells, consisting of the hollow metal hood B, open beneath and adapted to be attached to the margin of an ink-well, having flanged opening B^4 in front and a pivoted valve D, adapted to close from the rear within said hood against the flanged sides of said opening B^4, said valve supported in bearings in the sides of said hood B, substantially as described.

2. As an article of manufacture, the hollow metal hood B, expanded and open beneath to cover an ink-well, and tapered above to form a transverse apex with a sloped rear side, said hood vertically open in front, and a rearwardly-swinging valve pivoted to the upper margin of said opening B^4, said opening having flanged sides, and said valve adapted to be swung back against said sloped rear side of said cover and to close against said flanges B^6 B^6 by a counter-weight attached thereto, and said hood B having external overlapping shoulder B′, adapted to embrace the projecting neck of an ink-well, substantially as described.

3. In combination with inkstand A, having ink-well C, with circular aperture and lip A′, the self-closing cover having circular base with overlapping shoulders B′ B′, adapted to embrace said lip A′ and be cemented or otherwise attached thereto, said cover having central hood B, open beneath and tapered above to a broad transverse valve-seat, and flanged opening B^4, together with valve D, pivoted to the upper margin of said opening B^4, closed against flanges B^6 B^6 by a counter-weight attached in rear of said valve, and adapted to be swung backward in said hood B by pressure applied to the front thereof and close automatically against said flanges B^6 B^6, substantially as described.

4. As an article of manufacture, the hollow hooded cover B, open beneath, having opening B^4 in front, and flanges B^6 B^6, shoulders B′ B′ around the base thereof, the whole formed integral, and the valve D, attached to the upper margin of said opening B^4, adapted to be swung to the rear in said hood, closed automatically against flanges B^6 B^6 by a counter-weight upon said valve D, said valve supported by bearings in the sides of said hood B, the whole adapted to be attached to an ink-well, substantially as and for the purposes described.

5. In combination with the ink-well C, the hooded cover B, separate therefrom and adapted to be fitted thereto, said hood having open front B^4 opening beneath into said ink-well, flanges B^6 B^6, and rearwardly-swinging pivoted valve D, supported above said opening B^4, adapted to close against said flanges B^6 B^6, said valve extended downward below the lower margin of hood B and adapted to be swung to the rear within said ink-well, substantially as and for the purposes described.

6. In combination with the inkstand A, having ink-well C, the separate metal cover having shoulders B′ B′ to support the said cover upon the margins of said ink-well, hollow hood B, open into said ink-well, having opening B^4 and flanges B^6 B^6, transverse bottom part B^5 of said opening B^4, sloped downward and backward into the concavity of said ink-well, the free edge thereof continuous with said flanges B^6 B^6, together with rearwardly-swinging valve D, adapted to close automatically against said flanges B^6 B^6 and the free edge of said bottom B^5, said valve D hung with its lower part within the concavity of said ink-well and forming with the sloped surface B^5 an acute angle, substantially as described.

7. As an article of manufacture, a self-closing cover for inkstands, consisting of the hollow hood B, cast in a single piece, except the valve, of white-metal or other material unaffected by the acids of ink, open and expanded beneath, having shoulders B′ B′, adapted to support the same upon the margins of an ink-well, tapered above to a transversely-flat apex, said cover having opening B^4 in the front thereof, side flanges B^6 B^6 within said opening B^4, downwardly-sloping extended bottom B^5, and transversely-pivoted flat valve D, supported along the flattened apex B^3 of said hood in bearings in the sides of said hood B, and adapted to be swung backward within said hollow hood when pressed against from the front through said opening B^4 and to be closed by gravity against said flanges B^6 B^6 and the free edge of said sloped bottom B^5 when said pressure has been removed, the whole constructed separately from and independent of said ink-well and adapted to be applied thereto for temporary or permanent use, substantially as described.

8. In combination with the hood B, having self-closing valve D, operated by the insertion or withdrawal of a pen-point through the opening B^4, the inkstand A A^2, having ink-well C, opening vertically above and adapted to support the said hood B upon the marginal surfaces thereof, the lateral supply-reservoir C′, and the small connecting-passage c, connecting the bottom portions of C and C′, said reservoir C′ air-tight above and adapted to maintain a uniform level of ink-surface in the said ink-well C, substantially as and for the purposes herein shown and described.

9. In combination with the pneumatic ink-supplying reservoir C′, an open ink-well C and connecting-passage c, the hood B, covering said ink-well C and supported by the margins thereof, said hood having supporting-shoulders B′ B′, opening B^4 in front thereof, flanged sides B^6 B^6, and sloping bottom B^5, together with rearwardly-swinging valve D, pivoted at its upper margin to the apex B^3 of said hood B, and adapted to close automatically against said flanges B^6 B^6 and said sloped bottom B^5 and close said opening B^4, substantially as described.

10. An inkstand having a pneumatic ink-supplying reservoir C′, open vertical ink-well C, and passage c, connecting the lower parts of C and C′, in combination with a self-closing valve and cover B D, fixed at a definite height above the ink-surface of said ink-well C, said ink-level made constant in said ink-well by automatic supply from said reservoir C′ through said passage c, substantially as described.

11. In combination with the hollow hood B, expanded and open beneath, tapered and transversely flattened to an apex B^3, adapted to be applied to and supported by the margins of an open ink-well C,

and provided with opening B^4 in the front of said hood, the flanges B^6 B^6 along the sides of B^4, said flanges inclined to the rear from above downward, and the self-closing valve D, pivoted at E transversely along the said apex, and adapted to rest by gravity in an inclined position against the said sloped flanges B^6 B^6 and close the said opening B^4, substantially as described.

12. In combination with the glass valve D, the slotted metal tube F, adapted to embrace the free upper margin of said valve, said valve securely fixed therein, the free ends F' F' of said tube F, cylindrical in cross-section and projecting laterally from the sides of said valve, adapted to form supports for the same, and the bearings B^7 B^7 in hood B, substantially as described.

13. In a self-closing ink-well cover, the valve D, of glass or the like, having transverse grooves *d d'* near the margin and on opposite faces thereof, in combination with the slotted metal tube F, having opposite edges F^2 F^3 along said slot adapted to engage with said grooves *d d'* and securely hold said valve in place in said slotted metal tube and form a metallic support for the same, substantially as de scribed.

14. In combination with the valve D, having transverse grooves *d d'* on opposite faces and near one of the free edges thereof, the slotted tube F, adapted to support the said valve in bearings, having edge F^3 along said slot adapted to engage with groove *d* entirely across said valve, and the spring-lip F^2, projecting from the middle of the opposite edge of said slot, said spring-lip adapted to engage with said groove *d'* and by its spring tension force the opposite edge F^3 into groove *d* and securely hold the said slotted tube F in place upon said valve D, substantially as described.

15. In a self-closing inkstand-cover, in combination with the glass valve D, transversely grooved at *d* and *d'* upon opposite faces, the slotted spring-metal clamping-tube F, adapted to embrace the free margin of said valve and engage along the edge of said slot with one of said grooves and prevent displacement thereof, together with pivoted valve-supports attached to said slotted tube and pivoted in said cover B, substantially as described.

16. In combination with a flat glass valve having a transverse groove near its margin, a slotted spring-metal tube adapted to engage by one of the edges of said slot in said groove to prevent displacement thereof, and held in place by the pressure of the opposite edge of said slot against the opposite face of said valve, said slotted tube adapted to form a metal support for said valve and to be supported in bearings to allow motion of said valve thereupon, substantially as and for the purposes herein shown and described.

17. In combination with the hollow hood B, open beneath and adapted to be supported upon the margins of the open well C and form a cover for the same, said hood having opening B^4 in front, a self-closing valve pivoted at its upper margin within said hood, adapted to swing to the rear upon said pivot by pressure applied to the front of said valve and close automatically against flanged sides B^6 B^6 of opening B^4 when said pressure has been removed, said valve having a notch D^3 in its lower margin, adapted to give room for and permit withdrawal of a mucilage-brush or the like from said well C when said valve is closed, substantially as described.

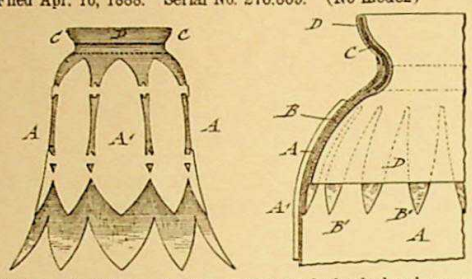
18. In a self-closing ink-well cover B, the hollow metal hood open beneath into the ink-well C, and having opening B^4 in front provided with flanged sides B^6 B^6, said hood expanded beneath, flattened and brought to a broad transverse apex above, said cover B extended to said apex B^2 and closed behind, in combination with a rearwardly-swinging valve D, supported in bearings in the sides of said cover B, and adapted to close from the rear against said flanged sides B^6 B^6, said valve D elongated from above downward and having its lower edge D' bent backward, said edge D' adapted to be swung to and fro beneath the surface of the ink in said ink-well C, and close against the rear side of the flanges B^6 B^6 and the rear edge of sloped bottom B^5 of open front B^4, said rear edge extended down within said ink-well into or near the surface of the ink therein, substantially as and for the purposes described.

19. As an article of manufacture, a heavy cast white-metal cover B, provided with conical flattened hood open beneath, and open front, and having valve D supported therein, and shoulders B' B', the whole adapted to rest by its own weight upon ink-well C, substantially as described.

20. In combination with the inkstand A, having a vertically-sunk ink-well C in the upper face thereof, the hollow hooded cast-metal cover B, extended over said ink-space, having shoulders B' B', adapted to rest by gravity upon the sides of said ink-well open beneath, and having flanged opening B^4 in front, said opening vertical or inclined and in rear of the front margin of said ink-well opening, and sloped bottom B^5, extending downward and backward from the front of said opening B^4, the rear edge thereof continuous with said flanged sides B^6 B^6, together with a valve supported above said opening B^4, extending downward into said ink-well C, adapted to close by a counterweight attached to the rear side thereof against said flanges B^6 B^6 and said free lower edge of said sloped bottom B^5, the whole constructed substantially as and for the purposes herein shown and described.

21. In a self-closing inkstand-cover having hood B open beneath and opening B^4 in front of said hood, the glass valve D, in combination with a metallic strip attached to one margin thereof and adapted to form a pivot or support for the same, substantially as described.

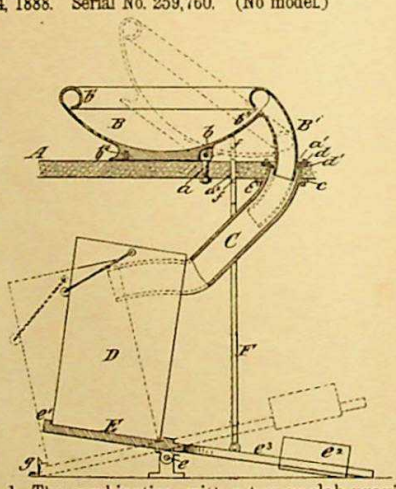
404,540. LAMP-SHADE. HUGO HOHENSTEIN, New York, N. Y. Filed Apr. 16, 1888. Serial No. 270,809. (No model.)



Claim.—1. A lamp-shade consisting of a body having a contracted neck, a ring at the neck, and an outwardly-bent re-enforcing layer provided with tapering fingers at the lower inner end, substantially as set forth.

2. A lamp-shade composed of a body having a contracted neck, a ring for re-enforcing said neck, an outwardly-bent layer applied to said ring and provided with tapering fingers, and a covering-layer extending from the contracted neck of the body over the inner surface of the ring and re-enforcing layer, substantially as set forth.

404,541. WASH-BASIN. PHILIP G. HUBERT, New York, N. Y. Filed Jan. 4, 1888. Serial No. 259,760. (No model.)



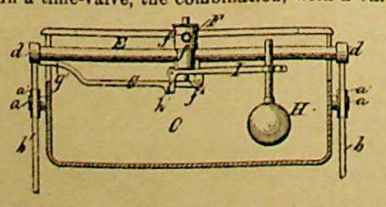
Claim.—1. The combination, with a top or slab provided with an opening, of a basin pivoted above the top or slab and having a curved discharge-nozzle working through said opening, a discharge-pipe in which said nozzle works, a tilting platform, a stop, and a connection between said tilting platform and stop, whereby when the platform occupies one position the rocking of the basin will be prevented, substantially as specified.

2. The combination, with a top or slab provided with an opening, of a basin pivoted above the top or slab and having a curved discharge-nozzle working through said opening, a discharge-pipe below said slab, a tilting platform, and a rod constituting a stop connected with said tilting platform and preventing the movement of the basin in one direction, substantially as specified.

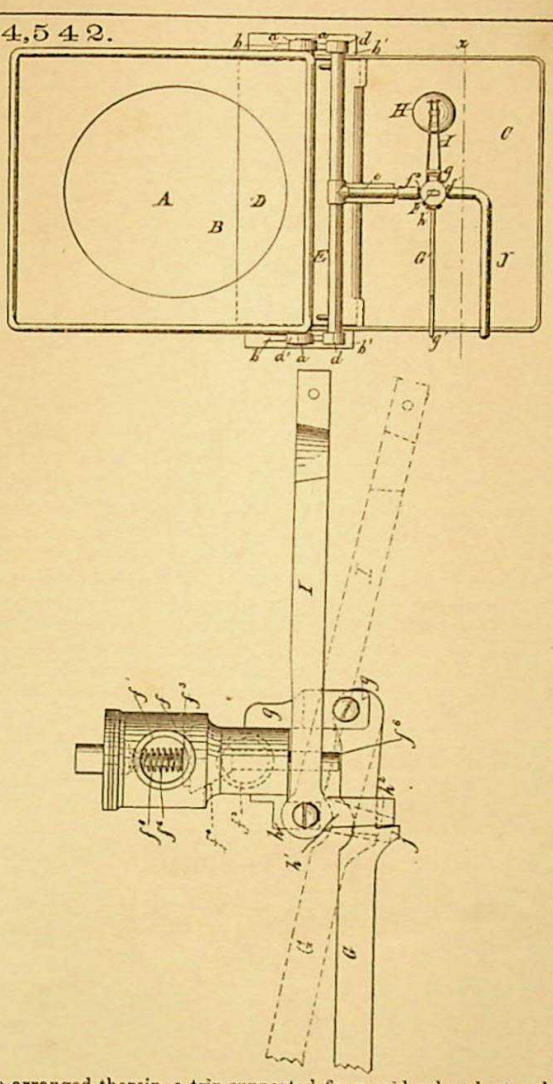
3. The combination, with a slab or stand-top and the discharge throat or pipe presented at an opening therein, of the pivoted basin B and and its discharge-nozzle B', the balancing-platform E and the stop-rod *f* operated thereby, and a lock with which the platform automatically engages in descending and which serves to lock the platform with the stop-rod in an elevated position, substantially as specified.

404,542. TIME-VALVE. PHILIP G. HUBERT, New York, N. Y. Filed Dec. 31, 1888. Serial No. 295,046. (No model.)

Claim.—In a time-valve, the combination, with a valve-chest, of



404,542.

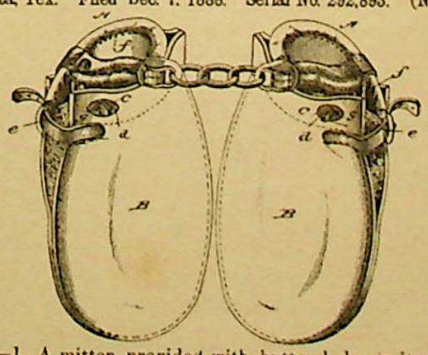


a valve arranged therein, a trip supported from said valve-chest and adapted to come in contact with the valve or a part thereof to move the valve from its seat, a lever also supported from the valve-chest and operating to automatically lock said trip in a position to hold the valve open, and a float acting on said lever to release the trip, substantially as specified.

404,543. METHOD OF REFINISHING CURTAINS. CHRISTIAN IMANDT, New York, N.Y. Filed Jan. 22, 1889. Serial No. 297,208. (No specimens.)

Claim.—The method herein described of refinishing lace curtains, which consists, first, in connecting a number of superposed curtains by basting their edges together; secondly, washing the so-basted curtains; thirdly, drying the same; fourthly, sizing the dried curtains, and, lastly, stretching and drying the same, substantially as set forth.

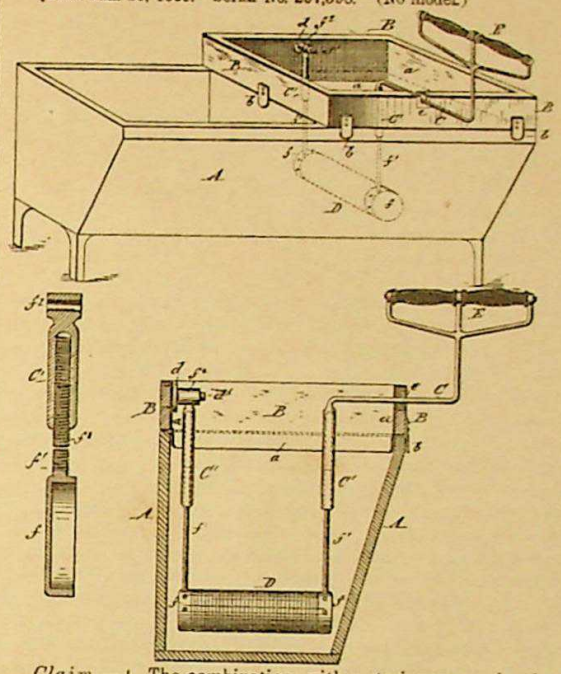
404,544. SHACKLE. JOHN JAMES and ALVIN D. GOODENOUGH, Henrietta, Tex. Filed Dec. 7, 1888. Serial No. 292,893. (No model.)



Claim.—1. A mitten provided with button-holes in its wrist, in combination with a handcuff provided with a fastening-button, substantially as specified.

2. A handcuff provided with a flexible wrist band or cuff and carrying devices whereby a mitten may be attached thereto, substantially as specified.

404,545. WASHING-MACHINE. ROSA JOEL, New York, N. Y. Filed Jan. 26, 1889. Serial No. 297,598. (No model.)

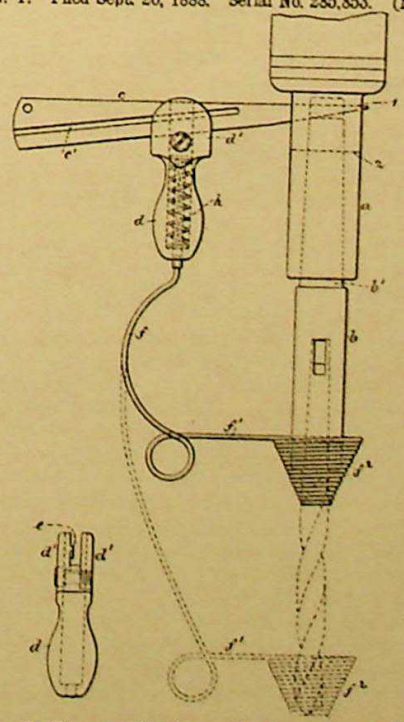


Claim.—1. The combination, with a stationary wash-tub, of a supporting-frame secured to the top of the same, a crank-shaft supported in bearings of said frame, a handle at the outer end of the crank-shaft, and a rubbing-roller at the lower part of the crank-shaft, substantially as set forth.

2. The combination, with a stationary wash-tub, of a supporting-frame secured to said tub, a crank-shaft supported in bearings of the frame and provided with tubular interiorly-threaded crank-arms, a handle at the outer upwardly-bent end of the crank-shaft, a rubbing-roller, and caps attached to the ends of the roller and provided with screw-rods for engaging the tubular crank-arms, substantially as set forth.

3. The combination, with an oscillating crank-shaft supported in suitable bearings and provided with tubular interiorly-threaded crank-arms, of a rubbing-roller and end caps attached to said roller and provided with screw-rods that engage the crank-arms, so as to adjust the roller higher or lower on the crank-arms, substantially as set forth.

404,546. DRIFT AND DRILL CATCH. JOHN T. KENWORTHY, Flushing, N. Y. Filed Sept. 20, 1888. Serial No. 285,853. (No model.)



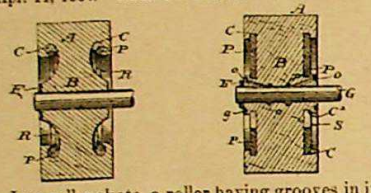
Claim.—1. The combination, with the wedge or drift tool for separating the shank of the tool or tool-holder from the vertical man-

drel, of the basket for holding the tool, and a connection between the basket and drift-tool, substantially as set forth.

2. The combination, with the wedge or drift tool having grooves *c'* in its side, of the basket for holding the tool, the handle *d* for receiving the wedge, and a connection from the same to the basket, substantially as specified.

3. The combination, with the wedge or drift tool, of the handle *d*, a spring within the handle, a basket for holding the drill or its stock, and a connection between the basket and the spring within the handle, substantially as specified.

404,547. SKATE-ROLLER. CHARLES J. KINTNER, Philadelphia, Pa. Filed Apr. 11, 1887. Serial No. 234,451. (No model.)



Claim.—1. In a roller-skate, a roller having grooves in its lateral faces and absorbent material located in said grooves for retaining the waste oil, substantially as described.

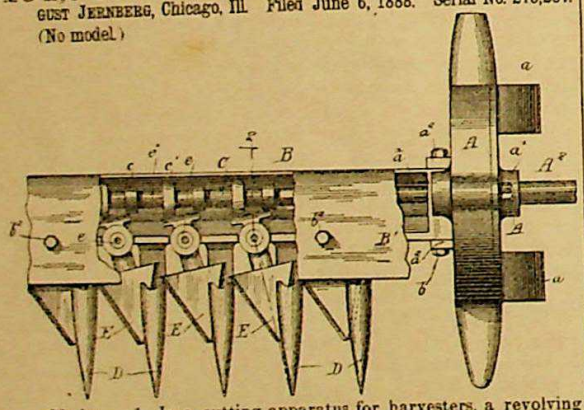
2. In a roller-skate, a roller having grooves in its lateral faces, absorbent material in said grooves, and means for retaining said absorbent material in place, substantially as described.

3. In a roller-skate, a roller having grooves in its lateral faces for catching the drip from the axle, in combination with oil-ducts running toward the center of the wheel, substantially as described.

4. In a roller-skate, a roller having grooves in its lateral faces, with absorbent material located therein, in combination with oil-ducts for conducting the oil to the axle of the skate.

5. In a roller-skate, a roller having grooves in its lateral faces for retaining the oil-drip, in combination with an oiling-groove and oil-ducts, substantially as described.

404,548. CUTTING APPARATUS. HJALMAR LINDESTRÖM and AUGUST JERNBERG, Chicago, Ill. Filed June 6, 1888. Serial No. 276,287. (No model.)



Claim.—1. In a cutting apparatus for harvesters, a revolving shaft mounted longitudinally in a suitable frame, a plurality of knives, each pivoted to said frame, and a plurality of cams, the cams for each knife being mounted in pairs on said shaft and at right angles to each other for the alternate engagement of said knife, substantially as specified.

2. In a cutting apparatus for harvesters, a revolving shaft mounted longitudinally in a suitable frame, a plurality of knives pivoted to said frame, said knives being formed with extensions *e'*, and a plurality of cams on said shaft mounted in pairs and at right angles to each other, said extensions *e'* being of such width as to engage at all times one cam of each pair of cams, substantially as described.

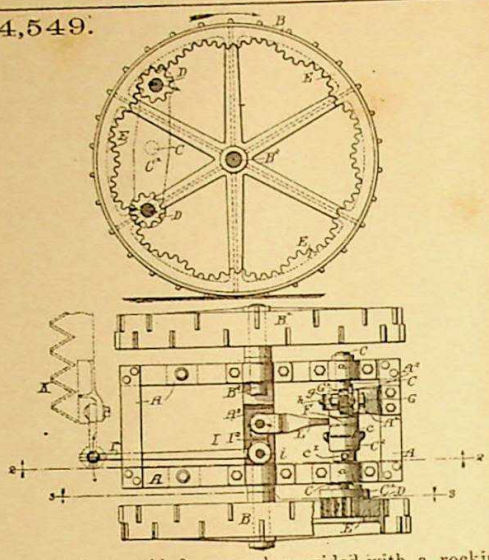
3. In a cutting apparatus for harvesters, a suitable frame, a shaft mounted thereon, a plurality of knives pivoted to the frame, and a plurality of cams on said shaft for engagement with the knives, the said frame being curved at its lower portion to form a trough or receptacle for oil or other lubricant into which the cams dip as they revolve and provided with a removable top plate B', all substantially as described.

404,549. MOWER. HJALMAR LINDESTRÖM, Englewood, Ill., assignor of one-half to August Jernberg, same place. Filed Sept. 21, 1888. Serial No. 286,011. (No model.)

Claim.—1. The combination, with the frame and cutter-bar of a mower, of a drive-wheel provided with an annular scalloped toothed cam and a swinging lever provided with two toothed wheels or pinions upon its ends intermeshing with said toothed cam, substantially as described.

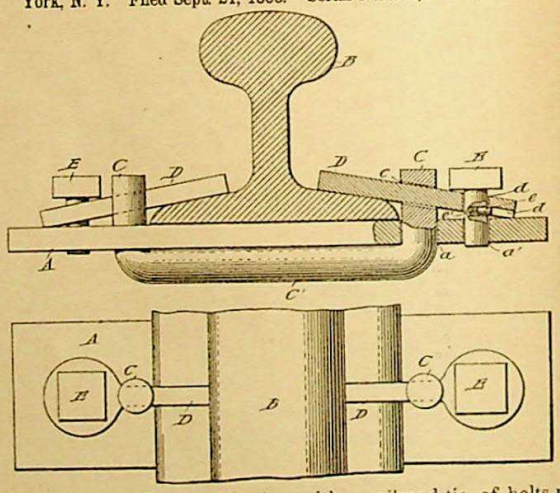
2. The combination, with the frame and cutter-bar of a mower, of a drive-wheel provided with a scalloped and toothed cam, a rock-

404,549.



shaft mounted on said frame and provided with a rocking lever, toothed pinions upon the ends of said lever engaging said cam, a longitudinally-grooved arm rigidly attached to said rock-shaft, a loose sleeve upon said rock-shaft provided with an arm adapted to engage the groove of the arm upon said rock-shaft, a hand-lever for moving said sleeve endwise upon the shaft, and a bell-crank lever, one arm of which is connected with the cutter-bar and the other with the arm upon the sleeve, substantially as described.

404,550. RAILROAD-RAIL FASTENER. CHARLES NETTER, New York, N. Y. Filed Sept. 21, 1888. Serial No. 285,982. (No model.)



Claim.—1. The combination, with a railroad-tie, of bolts projecting upward therethrough at each side of the rail-flange and formed with a transverse slot, keys inserted in said slot to bear on the rail-flange at one end and formed with a vertical aperture at the opposite end, and bolts passing through the said apertures and corresponding apertures in the tie, substantially as described.

2. A rail-fastener comprising a bolt having a transverse slot, an elongated key adapted to said slot and formed with an aperture at one end, and a bolt adapted to said aperture, substantially as described.

3. The bolt E, formed with a transverse recess, and the spring-acted locking-pin *e* in said recess, in combination, substantially as described.

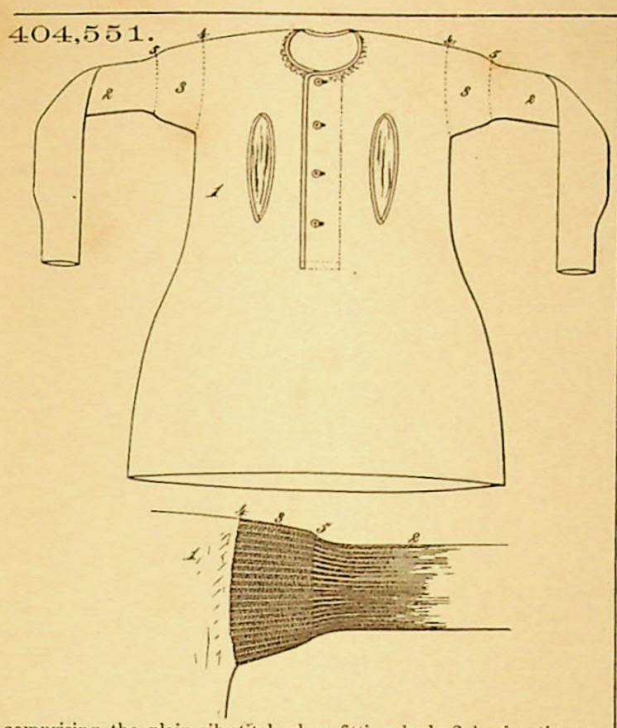
4. In a rail-fastener, the combination, with the tie, of a bar lying beneath the same and having upwardly-projecting ends extending through and above the tie at each side of the rail-flange, and keys or plates engaging said upwardly-projecting ends and bearing down on the rail-flange, the said keys being angular in cross-section, and thus adapted to be slid into position, substantially as described.

404,551. UNDER-VEST. CHARLES F. NORTH, Cohoes, N. Y. Filed Mar. 27, 1889. Serial No. 304,947. (Specimens.)

Claim.—1. As a new article of manufacture, a lady's under-vest consisting of a vest body and sleeves comprising a plain rib-stitch glove-fitting body 2, having a contracted cuff portion for the wrist, and the tuck-stitch section 3, sewed to the vest-body and gradually contracted from the latter to the rib-stitch glove-fitting sleeve-body, substantially as and for the purposes described.

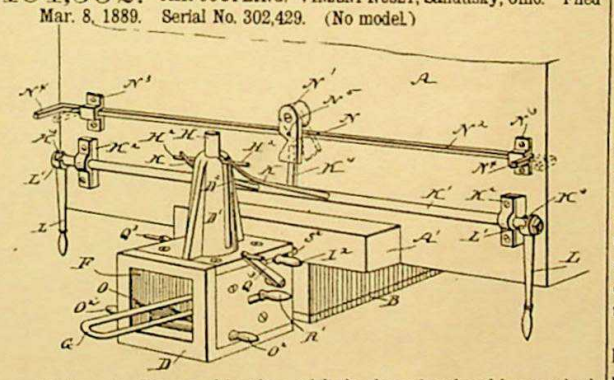
2. A lady's under-vest consisting of the vest body and sleeves

404,551.



comprising the plain rib-stitch glove-fitting body 2, having the contracted gored cuff portion, and the tuck-stitch section 3, sewed to the vest body and contracted therefrom to the rib-stitch glove-fitting sleeve-body, substantially as and for the purposes described.

404,552. CAR-COUPLING. VINZENT NUSLY, Sandusky, Ohio. Filed Mar. 8, 1889. Serial No. 302,429. (No model.)



Claim.—1. The combination, with the draw-head and its notched pin, of a slide having an opening through which the pin passes, and a spring pressing the slide toward the car to bring the front wall of its opening into the notch at the front side of the pin, the rear end of the slide being adapted to abut against the car and be thrown forward when the draw-head moves rearwardly, substantially as set forth.

2. In a car-coupling, the combination, with a yielding draw-head, of a link-plate mounted to turn in the draw-head opening and adapted to raise and lower the link, a spring for holding the said link-plate in a lowermost position, an arm for raising said link-plate and provided with a notch, and a pin adapted to engage the said notch to lock the said arm in place, substantially as shown and described.

3. In a car-coupling, the combination, with a yielding draw-head, of a link-plate mounted to turn in the draw-head opening and adapted to raise and lower the link, a spring for holding the said link-plate in a lowermost position, an arm for raising said link-plate and provided with a notch, a pin adapted to engage the said notch to lock the said arm in place, and a yielding plate carrying the said pin, mounted to slide in the draw-head and provided with a projection adapted to engage the car when the draw-head is moved rearward, so as to automatically release the said link-plate, substantially as shown and described.

4. In a car-coupling, the combination, with a draw-head provided with an offset having slots, of a pin mounted to slide in the said draw-head and the said offset and provided with arms passing through the said slots, arms adapted to engage the said pin-arms, a shaft mounted to turn on the front of the car and carrying the said arms, and levers held on the said shaft for turning the latter, substantially as shown and described.

5. In a car-coupling, the combination, with a draw-head provided with an offset having slots, of a pin mounted to slide in the said draw-head and the said offset and provided with arms passing through the said slots, arms adapted to engage the said pin-arms, a shaft mounted to turn on the front of the car and carrying the said arms, and levers held on the said shaft for turning the latter, each of the said levers being provided with an offset adapted to engage the pin on the said shaft, substantially as shown and described.

6. In a car-coupling, the combination, with a draw-head provided with an offset having slots, of a pin mounted to slide in the said draw-head and the said offset and provided with arms passing through the said slots, arms adapted to engage the said pin-arms, a shaft mounted to turn on the front of the car and carrying the said arms, levers held on the said shaft for turning the latter, a vertically-extending arm held on the said shaft, and a lock-plate pivoted on the front of the car and adapted to engage the said vertical arm, substantially as shown and described.

7. In a car-coupling, the combination, with a draw-head provided with an offset having slots, of a pin mounted to slide in the said draw-head and the said offset and provided with arms passing through the said slots, arms adapted to engage the said pin-arms, a shaft mounted to turn on the front of the car and carrying the said arms, levers held on the said shaft for turning the latter, a vertically-extending arm held on the said shaft, a lock-plate pivoted on the front of the car and adapted to engage the said vertical arm, and a transversely-extending rod pivotally connected with the said lock-plate, and mounted to slide in bearings on the end of the car, substantially as shown and described.

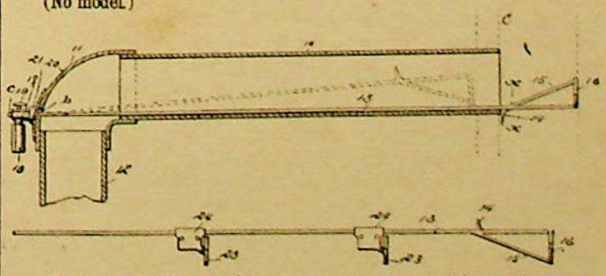
8. In a car-coupling, the combination, with a draw-head, and a pin held to slide vertically in the said draw-head and provided near its lower end with a notch, of a slide held to slide horizontally in the said draw-head and adapted to engage the said notch, a spring pressing on the said slide, and handles extending from the said slide to the outside of the draw-head, substantially as shown and described.

9. In a car-coupling, the combination, with a draw-head, of a link-plate held in the draw-head opening, a spring-pressed shaft carrying the said link-plate, an arm held on the end of the said shaft, a second arm pivoted on the said draw-head and connected by a spring with the said first-named arm, a pin adapted to engage a shoulder on the said second arm, and a yielding plate carrying the said pin and held to slide transversely in the said draw-head, substantially as shown and described.

10. In a car-coupling, the combination, with a draw-head, of a link-plate held in the draw-head opening, a spring-pressed shaft carrying the said link-plate, an arm held on one end of the said shaft, a second arm pivoted on the said draw-head and connected by a spring with the said first-named arm, a pin adapted to engage a shoulder on the said second arm, a yielding plate carrying the said pin and held to slide transversely in the said draw-head, and a projection formed on the said plate and extending to the rear end of the draw-head to engage the car when the draw-heads are pressed together, substantially as shown and described.

11. In a car-coupling, the combination, with a draw-head, of a link-plate held in the draw-head opening, a spring-pressed shaft carrying the said link-plate, an arm held on one end of the said shaft, a second arm pivoted on the said draw-head and connected by a spring with the said first-named arm, a pin adapted to engage a shoulder on the said second arm, a yielding plate carrying the said pin and held to slide longitudinally in the said draw-head, and crank-arms connected with the said second arm for turning the same, substantially as shown and described.

404,553. STOVE-PIPE ANCHOR AND FLUE-CLEANER. LEONIDAS H. OLDFIELD, Newton, Kans. Filed Nov. 24, 1888. Serial No. 291,796. (No model.)



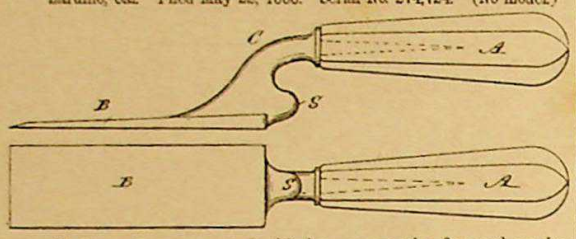
Claim.—1. The combination, with a rod provided with a spur extending from one side, of a plate extending from the other side of the rod, and a handle connected with the rod, substantially as described.

2. The combination, with a rod provided with a spur which extends from one side, of a plate extending from the other side, a socket-tube connected with the rod, and a weighted handle connected to the socket-tube, substantially as described.

3. The combination, with a rod 13, provided with a spur 14 and a plate 16, of a socketed weighted handle 18 and an inclined faced washer, substantially as described.

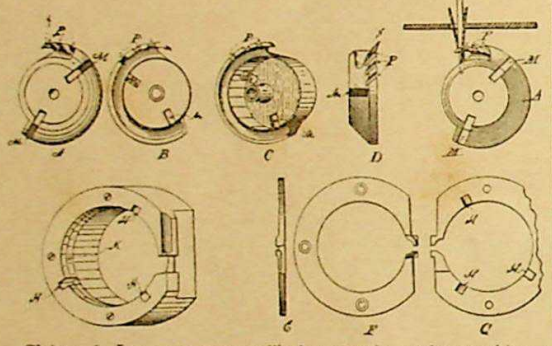
4. The combination, with a rod provided with a spur 14 and a plate 16, of auxiliary plates 23, and connections between the rods and plates, substantially as described.

404,554. CARPENTER'S CHISEL. THERON H. PALMER, San Bernardino, Cal. Filed May 22, 1888. Serial No. 274,724. (No model.)



Claim.—In a carpenter's chisel or gouge, the forward cutting blade or portion, in combination with the attached crooked shank constructed to receive a handle out of line or plane with said cutting blade or portion and provided with an anvil or hammer-block in rear of the cutting blade or portion, substantially as and for the purposes herein set forth.

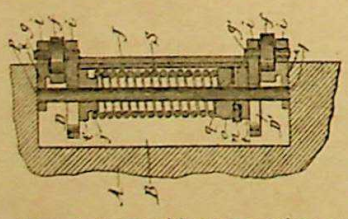
404,555. SHUTTLE AND RACE MECHANISM FOR SEWING-MACHINES. FRED D. PARKER, Denver, Colo. Filed Apr. 29, 1887. Renewed Feb. 18, 1889. Serial No. 300,365. (Model.)



Claim.—1. In a rotary or oscillating shuttle sewing-machine, a rotary or oscillating shuttle whose race-bearing surface is provided with one or more knives, in combination with the race having walls for engagement and co-operation with the knives on the shuttle, substantially as described, and for the purpose set forth.

2. In a rotary or oscillating shuttle sewing-machine, a rotary or oscillating shuttle whose race-bearing surface is provided with one or more knives, in combination with the thread-guard N, and the race having walls for engagement and co-operation with the knives on the shuttle, substantially as herein shown and set forth.

404,556. SPRING-HINGE. JOSEPH R. PAYSON, Jr., Chicago, Ill. Filed Nov. 6, 1888. Serial No. 290,099. (Model.)



Claim.—1. A door-butt comprising two members, one for attachment to a door and the other for attachment to a door-frame, one or more outward projections upon one of the members, a spring arranged to force the two members toward each other, and a pivot located substantially midway of the thickness of the door and engaging openings in both the said projection or projections and the other member, the opening or openings in one or both of said parts being larger than the pivot, substantially as described.

2. A butt for a lower part of a door, comprising two members for attachment, one to the door and the other to the door-frame, one or more outward projections upon one of the members, and a pivot located substantially midway of the thickness of the door and engaging openings in both the said projection or projections and the other member, the opening or openings in one or both said parts being a slot, substantially as described.

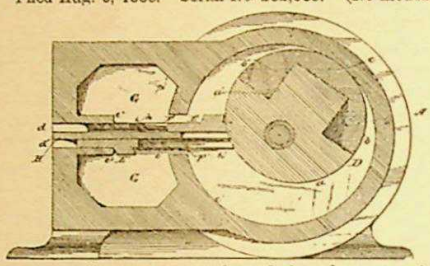
3. The combination, with the two members of the butt, one of which is provided with an outward projection or projections, of a central vertical pivot engaging the projection or projections and the other member by holes which in one or both are in oblong form, and a coiled torsion-spring surrounding the pivot and engaged with the several members, so that its force is exerted to draw the members toward each other, substantially as described.

4. In a centrally-pivoted butt, horizontal lateral extensions or cams upon one of the members having curved outer edges, and a spring arranged to draw the members toward each other.

5. In a centrally-pivoted butt, the horizontal lateral extensions or cams upon one of the members having curved edges, one or more friction-rollers upon the other member arranged to bear upon the curved faces of said cam-extensions, and a spring arranged to draw the members of the butt toward each other.

6. The combination, with the two members of a butt, of a central pivot attached to one of said members and having a bodily movement toward and from the other, and a spring engaged with the pivot and also with the member with respect to which said pivot is movable.

404,557. ROTARY STEAM-ENGINE. HOMER L. PHELPS, Athens, Pa. Filed Aug. 6, 1888. Serial No. 282,083. (No model.)

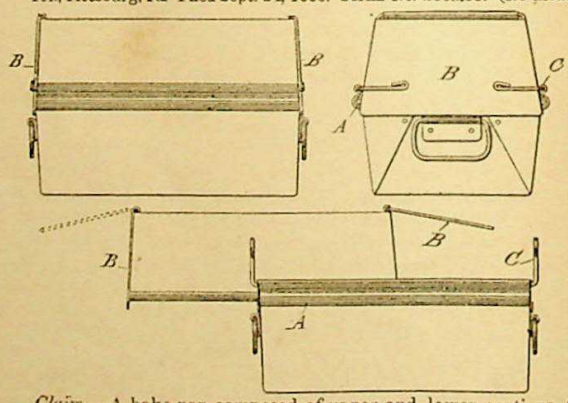


Claim.—1. In a rotary engine of the character described, the combination of the cylinder, a piston mounted eccentrically on a shaft passing through the same, a valve-chest at one side of said cylinder, the chambers G G′, connected with said cylinder, separated from each other by a partition, and the valves E E′, one in each chamber, substantially as and for the purposes set forth.

2. In a rotary engine, a sliding valve E, consisting of a flat body *f*, front *a*, projection *f′*, and side projections *g g′*, substantially as described.

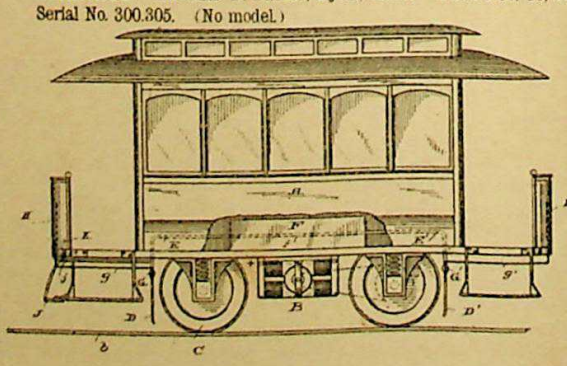
3. In a rotary engine, the combination, with the piston made in two parts mounted eccentrically on a shaft, of the valves E E′, working in conjunction with said piston and bearing in the tracks *h h′*, substantially as described.

404,558. PAN FOR BAKING AND ROASTING. CLARISSA PRESTON, Pittsburg, Pa. Filed Sept. 24, 1888. Serial No. 286,255. (No model.)



Claim.—A bake-pan composed of upper and lower sections, the lower section having closed sides and ends and provided with longitudinal grooves along its upper edge, and the upper section having closed sides and hinged doors at its ends and resting in the grooves of the lower section.

404,559. TRACK-MOISTENING APPARATUS FOR ELECTRIC RAILWAYS. EDWARD D. PRIEST, Lynn, Mass. Filed Feb. 18, 1889. Serial No. 300,305. (No model.)



Claim.—1. In an electric railway in which the rails form part of the supply-circuit, means for decreasing the resistance between the wheel or wheels and said track, comprising apparatus for supplying a moistening-liquid to the track, or to the wheels and track, substantially as described.

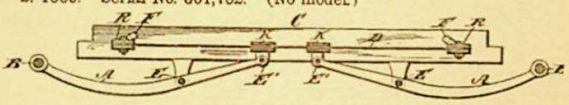
2. In electric railways, the combination, with a motor-car, of a tank for carrying a supply of liquid, connections extending from said tank to a point near the rail or rails of the track, and valves for controlling the flow of liquid from the tank, substantially as described.

3. In electric railways, the combination, with a motor-car, of a tank for carrying a supply of liquid, connections extending from the supply-tank to a point near the rail or rails of the track, valves for controlling the flow of liquid from the tank, and connections for operating the valves, substantially as described.

4. In electric railways, the combination, with a motor-car, of a tank for carrying a supply of liquid, separate distributing-pipes and connections extending from the supply-tank to points in advance of the wheels of the car, valves for controlling the flow of liquid in both sets of pipes, and means for opening and closing, and thereby permitting the liquid to flow from the tank through either of the sets of distributing pipes as desired, substantially as described.

5. In electric railways, the combination, with a motor-car, of a tank for carrying a supply of liquid, distributing-pipes and connections extending from the supply-tank to points adjacent to the track and roadway, valves for controlling the flow of liquid in the several sets of pipes, and means for opening and closing the valves, substantially as described.

404,560. VEHICLE-SPRING. SILAS H. RAYMOND, Grand Rapids, Mich., assignor to George E. Raymond & Co., same place. Filed Mar. 2, 1889. Serial No. 301,782. (No model.)

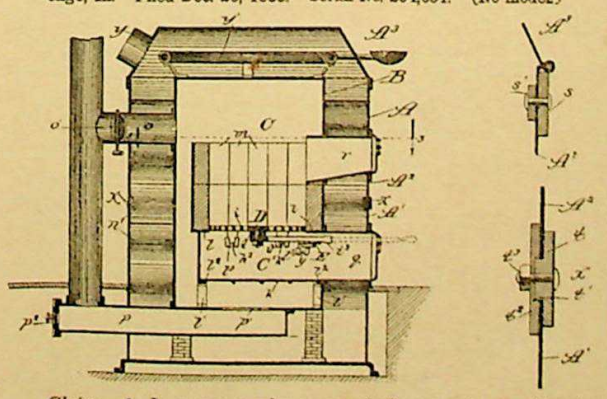


Claim.—1. In a vehicle, the vehicle-body, two arms, each pivoted to the vehicle-body at a point near the center of said arms, two side bars supporting the outer ends of such arms, a longitudinal spring, a movable shackle at each end of the spring and connected to the vehicle-body, and two center shackles, each of which center shackles is secured to the spring between the end shackles and pivoted, one to the inner end of each arm, substantially as described.

2. In a vehicle, the combination of the vehicle-body, two movable shackles supported by the vehicle-body, a spring with each end secured to one of these shackles and spanning the space between such shackles, two arms, and two side bars, each arm attached at its inner end to the spring near the center of said spring and at its outer end to a side bar, and supported at a point between its inner and outer ends on a pivot connected with the vehicle-body, substantially as described.

3. In a vehicle, the combination of the vehicle-body, arms supported at the outer ends by side bars, a spring attached at each end of the body near the outer side thereof and spanning the space between such connecting-points, said arms pivoted near the center of each arm to the body at their inner ends connected to the spring near the center thereof, said body supported upon such arms, which are in turn supported upon the side bars, said spring and arms acting as an equalizer, always keeping the vehicle-body in a horizontal position, substantially as described.

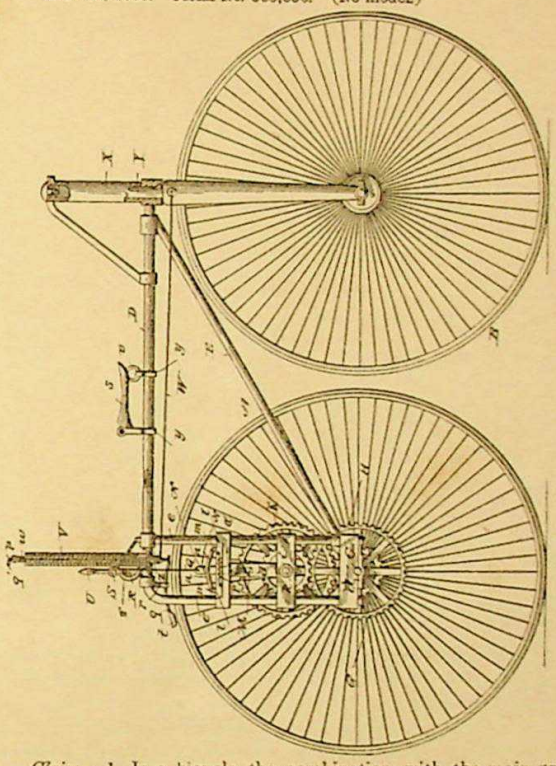
404,561. WARM-AIR FURNACE. BENJAMIN F. REYNOLDS, Chicago, Ill. Filed Dec. 26, 1888. Serial No. 294,651. (No model.)



Claim.—1. In a rectangular warm-air furnace, the combination, with the radiator, fire-pot, and ash-pit, of a casing A, comprising sections A' and A², joined at the adjacent edges by a strap *t*, having a tongue *t'* extending between the sections, a strap *t*², having a groove to receive the tongue *t'*, and nut-bolts *t*³, securing the strips together, and a top section A³, supported on a re-enforcing strip *s*, secured to the section A², substantially as described.

2. In a rectangular warm-air furnace, the combination, with the casing, fire-pot, and ash-pit, of a rectangular radiator B, comprising metal plates riveted together, having riveted thereto chutes *r q*, an indirect flue *p*, a flue *o*, radial corner flanges *n*, and intermediate zigzag flanges *n'*, substantially as described.

404,562. BICYCLE. STEPHEN D. REYNOLDS, Nevada, Mo. Filed Mar. 19, 1889. Serial No. 303,856. (No model.)



Claim.—1. In a bicycle, the combination, with the main drive-wheel having a hollow shaft and hub-gears, of the shaft-carrying pedal-levers, gears fixed thereto, one of said gears having a ratchet and the other a pawl, and a sliding frame carrying gears adapted to engage and disengage the gears on the hub and axle, substantially as specified.

2. In a bicycle, the combination, with the main wheel having its shaft provided with a gear at opposite ends, of the pedal-lever shaft, gears carried by the pedal-lever shaft, and a pawl-and-ratchet connection for said gears, substantially as specified.

3. In a bicycle, the combination, with the main wheel having its shaft provided with a gear at opposite ends, of the pedal-lever shaft, gears carried by the pedal-lever shaft, a pawl-and-ratchet connection for said gears, and a movable frame carrying gears adapted to engage and disengage the gears of the main-wheel shaft and those of the pedal-lever shaft, respectively, as set forth.

4. In a bicycle, the combination, with the main wheel having its shaft provided with a gear at opposite ends, of the pedal-lever shaft, gears carried by the pedal-lever shaft, a pawl-and-ratchet connection for said gears, and a movable frame carrying gears connected by pawl and ratchet and adapted to engage and disengage the gears on the main-wheel shaft and the gears on the pedal-lever shaft, substantially as specified.

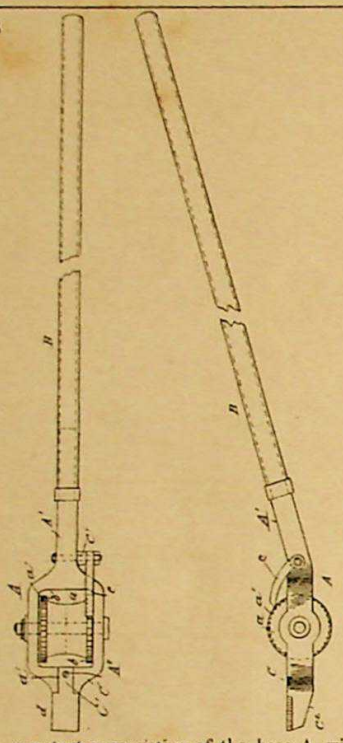
5. The combination, with the main frame, of the drive-wheels having hub-gears, the sliding frames carrying gears, the sliding arms, the horizontal rock-shaft, the segmental levers secured to the rock-shaft, and the rods connecting the sliding arms with said levers, substantially as specified.

6. In a bicycle, substantially as described, the combination, with the main frame and the sliding frame, of the two oppositely-sliding blocks carrying lug-eyes, an interposed spring for keeping the blocks moved outwardly, the sliding arms, and the pivoted arms connecting the sliding blocks with the said sliding arms, substantially as specified.

7. In a bicycle, the combination, with the hollow guide-post, of the hollow guide-shaft arranged therein, the brake-rod passing through the shaft, the brake-lever fulcrumed on the main frame and connected with the brake-rod, and a hand-lever, also connected with the rod and fulcrumed on the cross-bar, substantially as specified.

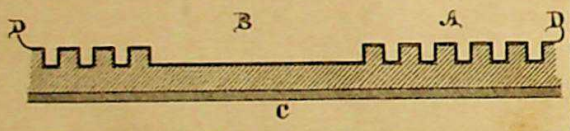
404,563. CAR-STARTER. GUSTAV SCHMIDT, Rheine, Prussia, Germany. Filed Mar. 11, 1889. Serial No. 302,812. (No model.)

404,563



Claim.—A car-starter consisting of the base A, with inclined shank A', pawl *c*, mounted thereon, and tubular inclined handle B, the arm C, with detachable plate *d*, and the grooved roller *a*, having flanges *b b'*, and ratchet-teeth *a'* on flange *b*, with which the pawl *c* engages, substantially as shown and described.

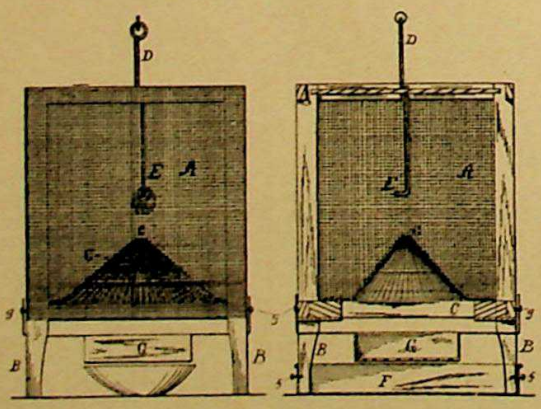
404,564. MATRIX FOR STEREOTYPING. FRIEDRICH SCHREINER and ARNOLD SCHOTT, Philadelphia, Pa. Filed May 9, 1888. Serial No. 273,274. (No model.)



Claim.—1. A matrix for stereotyping, composed of a sheet of fabric coated and partly impregnated with a semi-dry plastic mass and having a backing of pulp firmly connected with the back, substantially as herein shown and described.

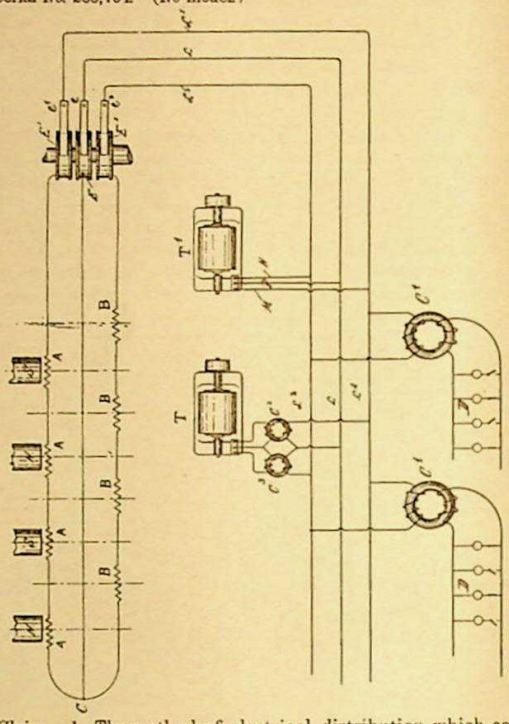
2. A matrix for stereotyping, composed of a sheet of fabric coated and partly impregnated with a semi-dry plastic mass, a sheet of fiber paper on the plastic mass, and a backing of pulp firmly connected with the back of the sheet of fabric, substantially as herein shown and described.

404,565. FLY-TRAP. ALBERT S. SCHUYLER, Pennington, N. J. Filed Oct. 31, 1888. Serial No. 289,647. (No model.)



Claim.—The combination, in a fly-trap, with the inclosed gauze-wire cage A, having legs B, removable cone-shaped bottom C, with opening *e* therein, suspending-hook D, and bait-hook E, of the bait-pan F, inclosing the bottom of the legs B, and bait-pan G, of smaller size than the pan F, and arranged between said pan F and the bottom C, and both of said pans F and G removably secured in position, as described, for the purposes specified.

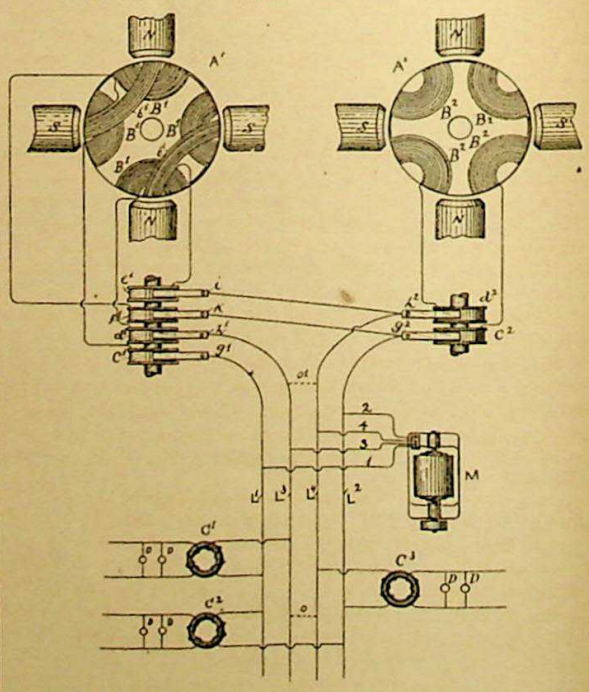
404,566. METHOD OF DISTRIBUTION BY ALTERNATING ELECTRIC CURRENTS. OLIVER B. SHALLENBERGER, Rochester, assignor to the Westinghouse Electric Company, Pittsburg, Pa. Filed Aug. 25, 1888. Serial No. 283,764. (No model.)



Claim.—1. The method of electrical distribution which consists in the generation of an alternating current by the superposition of two alternating currents differing in phase and the derivation of currents therefrom, some dependent upon the component currents and some upon the resultant currents formed by their combined action.

2. The method of electrical distribution which consists in producing two alternating electric currents the phases of which differ in time and superposing portions of such currents, and thereby producing a resultant alternating current the phases of which differ in time from those of the original currents, utilizing such resultant current for operating translating devices, and causing the balance of the original currents to traverse independent circuits.

404,567. SYSTEM OF GENERATORS FOR ALTERNATING ELECTRIC CURRENTS. OLIVER B. SHALLENBERGER, Rochester, assignor to the Westinghouse Electric Company, Pittsburg, Pa. Filed Sept. 8, 1888. Serial No. 284,896. (No model.)



Claim.—1. The combination of two alternating-current electric generators and synchronizing-coils applied to the armature of one of

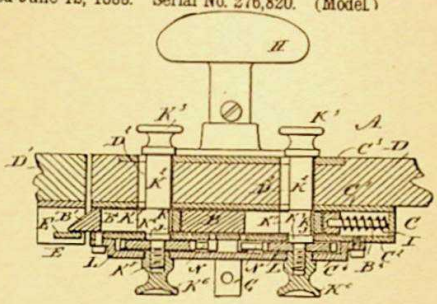
the generators and connected in parallel with the coils of the other generator.

2. The combination of two alternating-current electric generators and their circuits and synchronizing-coils applied to the armature of one of the generators and connected in parallel with the coils of the other generator and having their magnetic axis at an angle with reference to the main coils of the first-named generator.

3. The combination, with two alternating-current electric generators, of synchronizing-coils applied to the armature of one of the generators and connected in parallel with the coils of the other generator, translating devices operated from the respective circuits of said armatures, and a single apparatus deriving independent currents from the circuits of said generators.

4. The combination, with two alternating-current electric generators delivering two currents differing in the time of their phases, of translating devices deriving currents from the respective generators and other translating devices deriving currents due to the superposition of the two currents of the said generators.

404,568. COMBINATION-LOCK. IRVIN A. SHAW, Kinsley, Kans. Filed June 12, 1888. Serial No. 276,820. (Model.)



Claim.—1. The combination, with a sliding bolt having a longitudinally-extending slot and a circular opening communicating with the inner end of said slot, of a shaft having a flat part, a circular tumbler having a slot receiving said flat part and turning in said circular opening, whereby, when said flat part and tumbler-slot are perpendicular to the bolt-slot, the bolt will be locked and when turned flatwise into the plane of the bolt-slot the bolt may be retracted, said tumbler sliding with the bolt, substantially as set forth.

2. In a combination-lock, the combination, with a locking-bolt provided with a circular slot connecting with a longitudinal slot, of a shaft provided with knobs and having a flat part, a tumbler held on the said flat part and fitting into the circular slot of the locking-bolt, a ratchet-wheel held on the said shaft and turning with it, and a spring engaging with its free end the teeth of the said ratchet-wheel, substantially as shown and described.

3. In a combination-lock, a locking-bolt provided with a circular slot continuing into a longitudinal slot, and a knob-shaft provided with a pin for operating said locking-bolt, in combination with a shaft provided with a knob on the inside and on the outside of the door, and also having a flat part adapted to engage the longitudinal slot of the said locking-bolt, a slotted tumbler held on the said flat part and fitting into the circular slot of the said locking-bolt, a ratchet-wheel held on and turning with the said shaft and provided with a space in its periphery, said space being formed by the breaking out of several teeth, and a spring engaging with its free end the teeth and space of the said ratchet-wheel, substantially as shown and described.

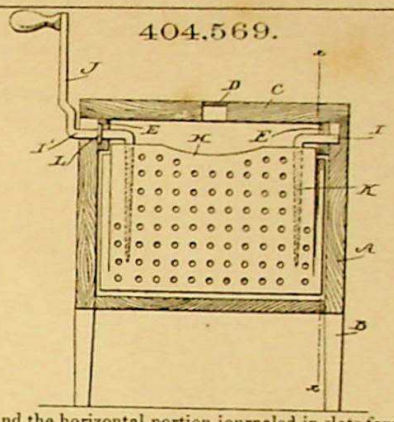
4. In a combination-lock, a locking-bolt provided with a circular slot continuing into a longitudinal slot, and a knob-shaft provided with a pin for operating said locking-bolt, and a spring bearing against said locking-bolt, in combination with a shaft provided with a knob on the inside and on the outside of the door, and also having a flat part adapted to engage the longitudinal slot of the said locking-bolt, a slotted tumbler held on the said flat part and fitting into the circular slot of the said locking-bolt, a ratchet-wheel revoluble on the said shaft and provided with a space in its periphery, said space being formed by breaking out several teeth, a knob screwed on the shaft against said ratchet-wheel and clamping it in place, and a spring engaging with its free end the teeth and space of the said ratchet-wheel, substantially as shown and described.

404,569. CHURN. WILLIAM M. SHIRA, Butler, Pa. Filed Nov. 13, 1888. Serial No. 290,667. (No model.)

Claim.—1. In a churn, the combination, with a perforated dasher, of the angular supporting-arms I I′, each of said arms having a threaded tapering member K, adapted to enter the dasher, the horizontal members resting in the sides of the body, and a handle J, attached to the arm I′, substantially as shown and described.

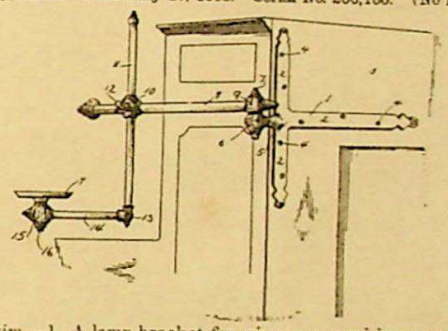
2. In a churn, the combination, with a body, of a perforated dasher H, having rabbeted ends *h*, as shown, the angular supporting-arms I I′, having the threaded tapering portion K, adapted to enter

404,569.



the dasher, and the horizontal portion journaled in slots formed in the sides of the box, and a handle J, formed integral with supporting-arm I′, substantially as shown and described.

404,570. PIANO LAMP-BRACKET. WILLIAM A. SMITH, Butte City, Mont. Filed July 17, 1888. Serial No. 280,183. (No model.)

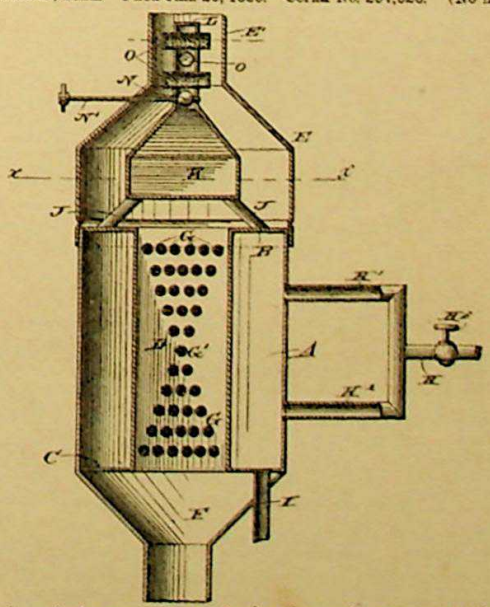


Claim.—1. A lamp-bracket for pianos, comprising an apertured base-plate provided with an arm, a horizontal arm secured to the arm of the base-plate, a sleeve on the said horizontal arm, an elbow-lever adjustably secured in the sleeve, and a lamp-stand secured to the horizontal member of the elbow-arm, substantially as described.

2. A lamp-bracket for pianos, comprising a four-armed base-plate having three of its arms apertured, a horizontal arm pivoted to one of the arms of the base-plate, a sleeve on the horizontal arm, a vertical arm adjustably secured in the sleeve and provided with a horizontally-projecting member, and a lamp-stand on the said horizontal member, substantially as herein shown and described.

3. A lamp-bracket consisting of base-plate 1, with arm 5, socket 6, horizontal rod 8, with socket 9, secured to socket 6 by pivot-pin 7 and having vertical sleeve 10, with set-screw 12 and vertical rod 11, held in sleeve 10 by set-screw 12, and having horizontal arm 14, with vertical socket 15, and lamp-standard 17, substantially as described.

404,571. HEATING AND STEAMING GRAIN. WILLIAM H. SMITH, Hickman, Tenn. Filed Jan. 29, 1889. Serial No. 297,926. (No model.)



Claim.—1. In an apparatus for heating and steaming grain, the combination, with a closed steam-vessel provided on top with a hood, of

a drying-chamber located centrally in the said steam-vessel and opening at its upper end into the said hood, and a steam-chest located in the said hood above the said drying-chamber and in communication with the said steam-vessel, substantially as shown and described.

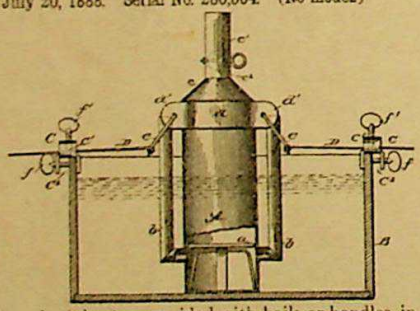
2. In an apparatus for heating and steaming grain, the combination, with a closed steam-vessel provided on top with a hood, of a drying-chamber located centrally in the said steam-vessel and opening at its upper end into the said hood, a steam-chest located in the said hood above the said drying-chamber and in communication with the said steam-vessel, perforated pipes held in the upper end of the said steam-chest and projecting into the inlet of the said hood, substantially as shown and described.

3. In an apparatus for heating and steaming grain, the combination, with a closed steam-vessel provided on top with a hood, of a drying-chamber located centrally in the said steam-vessel and opening at its upper end into the said hood, a steam-chest located in the said hood above the said drying-chamber and in communication with the said steam-vessel, perforated pipes held in the upper end of the said steam-chest and projecting into the inlet of the said hood, and a valve held in the said steam-chest for opening and closing the said perforated pipes, substantially as shown and described.

4. In an apparatus for heating and steaming grain, the combination, with a closed steam-vessel connected with a suitable source of steam-supply, a hood held on top of the said steam-vessel and provided with a grain-inlet pipe and a spout supported on the lower end of the said steam-vessel, of a drying-chamber held centrally in the said steam-vessel and opening at its upper end into the said hood and at its lower end into the said spout, pipes extending through the said drying-chamber into the said steam-vessel, a steam-chest held in the said hood above the said drying-chamber and in communication with the said steam-vessel, a pipe extending from the upper end of the said steam-chest, and perforated pipes extending transversely through the said pipe into the grain-inlet pipe, substantially as shown and described.

5. In an apparatus for heating and steaming grain, the combination, with a closed steam-vessel connected with a suitable source of steam-supply, a hood held on top of the said steam-vessel and provided with a grain-inlet pipe, and a spout supported on the lower end of the said steam-vessel, of a drying-chamber held centrally in the said steam-vessel and opening at its upper end into the said hood and at its lower end into the said spout, pipes extending through the said drying-chamber into the said steam-vessel, a steam-chest held in the said hood above the said drying-chamber and in communication with the said steam-vessel, a pipe extending from the upper end of the said steam-chest, perforated pipes extending transversely through the said pipe into the grain-inlet pipe, and a valve held in the said pipe to connect the same with or disconnect it from the steam-chest, substantially as shown and described.

404,572. WATER-HEATER. SIMON SPIRO, Birmingham, Ala. Filed July 20, 1888. Serial No. 280,564. (No model.)



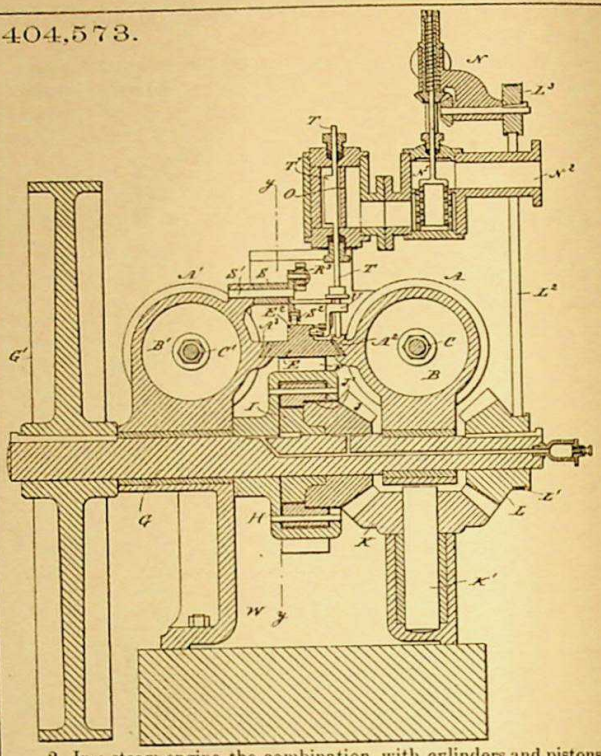
Claim.—1. A heater provided with bails or handles, in combination with the retaining-vessel, securing-straps engaging the handles or bails, and means for adjustably and detachably connecting the said straps to the retaining-vessel, substantially as described.

2. The heater provided with bails or handles, in combination with the brackets applied to a containing vessel or receptacle and having closed loops or eyes and flanges, the hooked plates or straps connecting with said bails or handles, and screws in the said brackets for adjustably connecting the plates to the brackets and detachably connecting the brackets to the receptacle, substantially as specified.

404,573. STEAM-ENGINE. ALFRED H. F. STRAUB, Los Angeles, Cal. Filed July 30, 1888. Serial No. 281,359. (No model.)

Claim.—1. In a steam-engine, the combination, with cylinders and pistons operating in the same, of steam-chests held on the said cylinders, slide-valves held in the said steam-chests, a valve-rod connecting the said slide-valves, a lever pivotally connected with the said valve-rod, and a bar secured to the pistons and sliding between the cylinders and operating on the said lever to shift the said slide-valves, substantially as shown and described.

404,573.

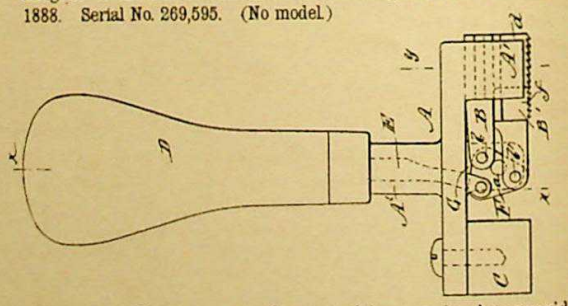


2. In a steam-engine, the combination, with cylinders and pistons operating in the same, of steam-chests held on the said cylinders, slide-valves held in the said steam-chests, a valve-rod connecting the said slide-valves, a lever pivotally connected with the said valve-rod, a bar having a reciprocating motion derived from the said pistons and operating on the said lever to shift the said slide-valves, and a cut-off valve connected with the said steam-chest and controlled by the said bar, substantially as shown and described.

3. In a steam-engine, the combination, with a cut-off valve, of a valve-stem carrying the said valve, a forked arm held on the said valve-stem and provided with friction-rollers, and a bar having a reciprocating motion derived from the action of the pistons, the said bar being provided with guideways for the said friction-rollers, substantially as shown and described.

4. In a steam-engine, the combination, with two slide-valves and a valve-rod connecting the said slide-valves, of a lever pivotally connected at one end with the said valve-rod and provided at its other end with a friction-roller, a bar having a reciprocating motion derived from the pistons, guideways formed on the top of the said bar and on which travels the said friction-roller, and stop-wheels held on the top of the said bar for reversing the said lever, substantially as shown and described.

404,574. STAMP-CANCELER. BENJAMIN SUMMERS, Petersburg, assignor of one-half to Caleb C. North, Huntingdon, Pa. Filed Apr. 4, 1888. Serial No. 269,595. (No model.)

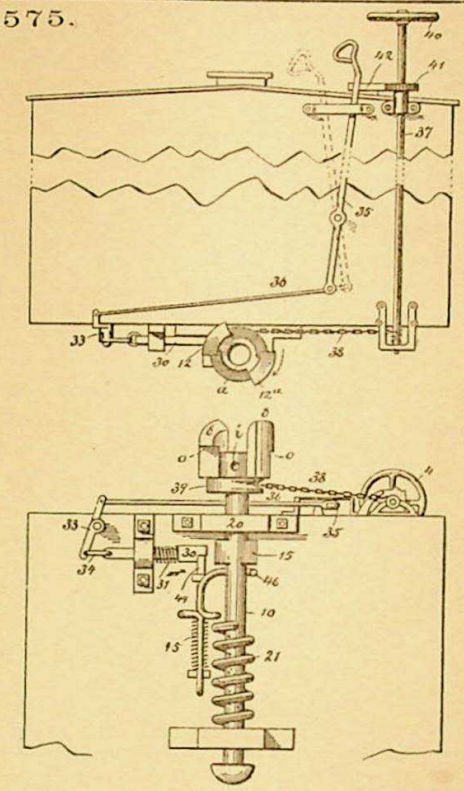


Claim.—1. The stamp-canceler comprising a main plate provided with a handle and parallel cheek-pieces, in combination with a tumbler, a rod connected thereto, and blocks held between the cheek-pieces in ways and connected to the tumbler, whereby the downthrust of the handle will move the said blocks in a straight line between the cheek-pieces, substantially as described.

2. The plate A, having projection G and tumbler F pivoted thereto, and the rod E, attached to the tumbler, in combination with the blocks B B', connected to the tumbler on opposite sides of its pivot, substantially as described.

404,575. CAR-COUPLING. ALFRED SWENSON, Greenview, assignor to Peter J. Palmquist, Menard, Ill. Filed Mar. 12, 1889. Serial No. 302,946. (No model.)

404,575.



Claim.—1. In a car-coupler, the combination, with a spring-actuated draw-bar mounted to turn in its bearings and provided with beveled hooks, of a spring-actuated bolt for engaging the draw-bar and an operating-lever connected to said bolt, substantially as described.

2. In a car-coupler, the combination, with a draw-bar formed with a rib 14 and a boss 15, of a spring connected to the draw-bar and to a fixed portion of the car, a bolt arranged to engage the boss 15, a draw-head formed with hooks 12 and 12ª, having inclined faces *b*, a chain connected at one end to the draw-bar, and a shaft to which the other end of the chain is connected, substantially as described.

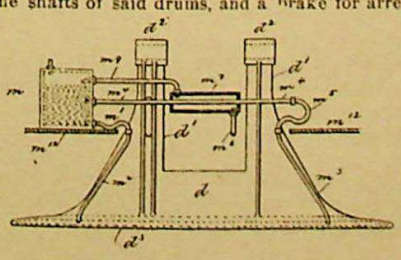
3. In a car-coupler, the combination of the following elements: a draw-bar 10, formed as described, a spring 21, bolt 30, spring 31, arranged in connection with the bolt, a bolt 44, a spring 45, arranged in connection therewith, an arm 46, extending therefrom, a lever 33, connected to the bolt 30, a lever 35, a rod connecting the levers 33 and 35, a chain 38, and a shaft 37, all the parts being arranged substantially as described.

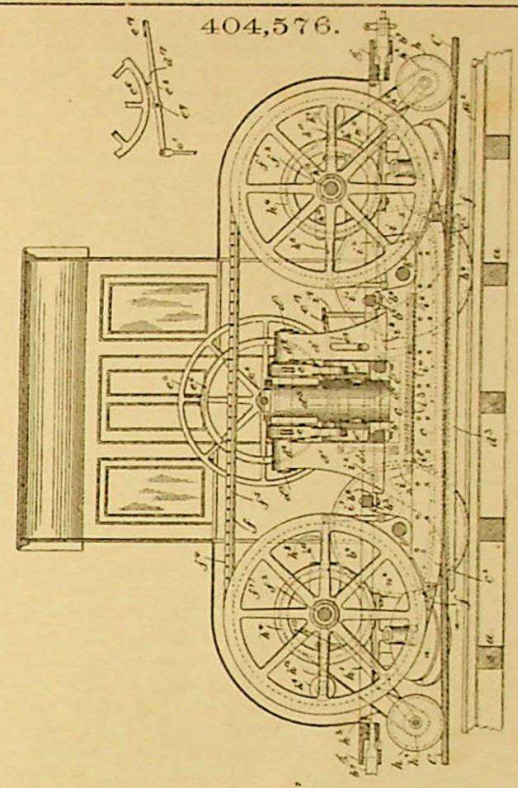
404,576. GRIP FOR CABLE RAILWAYS. CORNELIUS TIERS, New York, JOHN H. PENDLETON, Brooklyn, and ANDREW BRYSON, Jr., New York, assignors to the Rapid Transit Cable Company, New York, N. Y. Filed July 21, 1888. Serial No. 280,658. (No model.)

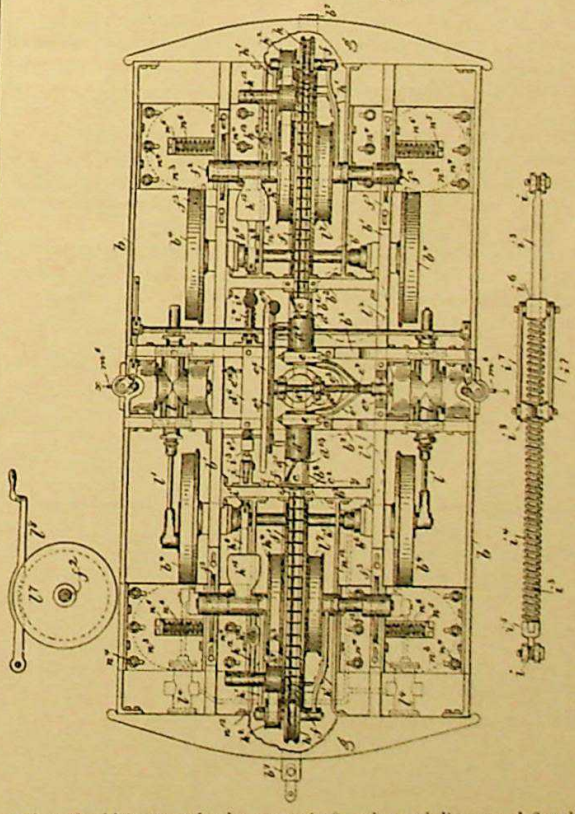
Claim.—1. The combination, with the stationary part of the grip and a support for the same, of a moving part having a hook at its lower end, a pivot-shaft for said hook to swing upon, means for raising and lowering said shaft, an endless belt against which the cable is clamped, and drums for supporting said belt, substantially as specified.

2. The combination, with the stationary part of the grip and a support for the same, of a moving part having a hook at its lower end, a pivot-shaft for said hook to swing upon, means for raising and lowering said shaft, an endless belt against which the cable is clamped, drums for supporting said belt, and means for rotating said drums and endless belt, substantially as specified.

3. The combination, with the stationary and moving part of the grip, the latter having a hook-shaped lower end, of an endless belt against which the cable is clamped, shafts and drums for supporting said belt, means for rotating said shafts and drums, a brake-wheel upon one of the shafts of said drums, and a brake for arresting the







rotation of said brake-wheel and its shaft, substantially as and for the purposes specified.

4. The combination, with the stationary part of the grip and a support for the same, of the moving part of the grip, having a hook at its lower end, the cylinder d^9 and its plunger, the shaft d^{13}, passing through the plunger and supporting the moving part of the grip, the lever e' and arms e; the shaft e^3, ratchet-wheel e^6, and pawl-lever e^5 and the chain e^7, connecting the shaft e^3 to the lever e', substantially as specified.

5. The combination, with the stationary part of the grip, a support for the same, the moving part of the grip, the cylinder d^9, plunger d^4, and shaft d^{13}, of the lever e', arms e, the shaft e^3, ratchet-wheel e^6 and its pawl, the chain e^7, connected with said shaft e^3 and toggle-lever, and a spring connected with said chain, for the purposes specified.

6. The combination, in a gripping device for cable railways, of the stationary part of the grip, a pivoted moving part, means for lowering and raising said moving part of the grip, and a yielding connection to the moving part of the grip, so that said moving part may yield if the cable is obstructed in its passage in the grip, as set forth.

7. The combination, with the stationary and moving part of the grip, means for operating said moving part, the endless belt f, and shafts and drums for supporting said belt f, of the arm h', pivoted upon one of said shafts, the wheel h, carried by said arm h', the pulleys h^2 h^4 and band h^{13}, and means, substantially as specified, for lowering the wheel h, for the purposes set forth.

8. The combination, with the stationary and moving part of the grip, means for operating said moving part, the endless belt f, shafts and drums for supporting said belt, the arms h', wheels h, pulleys h^2 h^4, bands h^3, levers h^8, i, and i^8, links i', the arms h^{12} and rollers h^9, a connection between the arms h' and h^{12}, and a yielding connection between the lever i and the lever i^8, substantially as and for the purposes set forth.

9. The combination, with the stationary and moving part of the grip and means for operating said moving part, of the endless belt f, formed of bands of leather or other material, to which blocks of leather are secured, and means for supporting said endless belt, substantially as and for the purposes specified.

10. The combination, with the gripping device and the car-frame and its wheels and axles, of the pairs of pulleys n, supports for said pulleys fitted to move upon the car-frame, the springs n^6, the wheels n^8, carried by said pulley-supports, and a rail n^7, supported upon the cross-ties for moving and keeping the pulleys upon one side of the car into contact with the cable when the car is traveling upon a curved portion of the road, as set forth.

11. The combination, with the cable railway, the car, and its wheels and axles, a gripping device upon the car, and guide-pulleys and their supports, also upon the car, of a rail supported upon the railway structure at the curved portion thereof to act upon said guide-pulleys and keep the cable toward the center of the curved track, substantially as set forth.

12. The combination, with the stationary and moving part of the grip, the toggle-arms, chain, shaft, ratchet-wheel, and pawl-lever for holding up the moving part of the grip, of the lever o^2, connected to the pawl-lever by a link, an incline o^4 upon the roadway for disconnecting the pawl-lever and allowing the moving part of the grip to drop, and the shear o^5, for moving the hook of the grip from under the cable, substantially as and for the purposes specified.

13. The combination, with the stationary and moving part of the grip, of the plunger d^4, connected to said moving part of the grip, the toggle-arms, shaft e^3, chain, ratchet-wheel, and pawl-lever, the spring p', connected to said shaft e^3, the cylinder d^5, a reservoir containing compressed air, a pipe connecting said reservoir with the plunger-cylinder, a cock in said pipe, an arm connected with the plug of said cock, and an incline o^9 upon the roadway for moving said arm and opening the cock to admit compressed air to the plunger-cylinder and lift said plunger and the moving part of the grip, as specified.

14. The combination, with the gripping device, the car upon which it is mounted, a reservoir containing compressed air upon said car, the inclines o^4 o^7 o^9, and shear o^5 upon the roadway, and mechanism, substantially as specified, operated by said inclines, so that at the terminals of cable-sections the moving part of the grip is dropped and swung out from beneath one section of cable and then swung under and lifted to connect the cable of the next section with the grip, as specified.

15. The combination, with the stationary and moving part of the grip and means, substantially as specified, for supporting said moving part of the grip, of the links e^{11} e^{12} and rod e^{10}, for swinging the moving part of the grip by hand, as set forth.

16. The combination, with the stationary and moving part of the grip and the endless belt against which the cable is clamped, of a shoe of wrought-iron or other suitable material upon the stationary portion of said grip, against which shoe the inner surface of the endless belt is pressed when the cable is clamped by the grip, as set forth.

17. The combination, with the stationary part of the grip, of the moving part of the grip, having a hollow hook, a tank containing water or other fluid, and pipes connecting the respective ends of the hook with said tank, so that water or other fluid is caused to circulate through the hook as soon as the latter becomes heated, as set forth.

18. The combination, with the stationary part of the grip, of the moving part having a hollow hook, a tank containing water or other fluid, pipes connecting the respective ends of the hook with the tank, and a jacket for receiving exhaust compressed air surrounding the return water-pipe, so that the water or other fluid in the pipes and tanks is cooled by exhaust compressed air, as set forth.

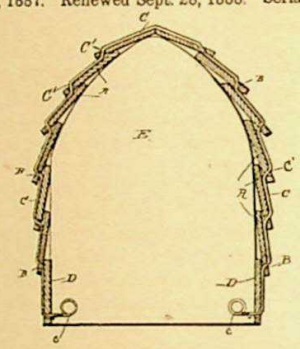
19. The combination, with the stationary part of the grip, of the moving part having a hollow hook, a tank containing fluid, and pipes connecting the grip with said tank, so that the fluid is caused to circulate through the grip as the latter becomes heated, substantially as set forth.

20. The combination, with the grip mechanism, one part of which is hollow, of a fluid-supplying device that causes the fluid to pass through the hollow part of the grip for cooling the same, substantially as specified.

21. The combination, in a grip for cable railways, of an endless belt against which the cable is clamped and means for putting said belt in motion prior to the contact of the cable with said belt, substantially as specified.

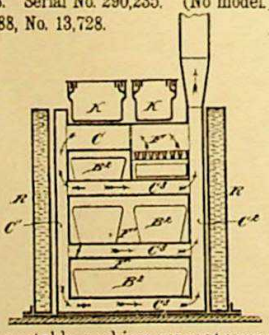
22. The combination, in a grip for cable railways, of an endless belt against which the cable is clamped, drums for supporting said belt, a wheel that is rotated by the cable, and a connection between said wheel and one of said drums for giving motion to said endless belt, substantially as specified.

404,577. HAY-CAP. WALTER R. THATCHER, Oskaloosa, Iowa. Filed May 18, 1887. Renewed Sept. 28, 1888. Serial No. 286,708. (No model.)



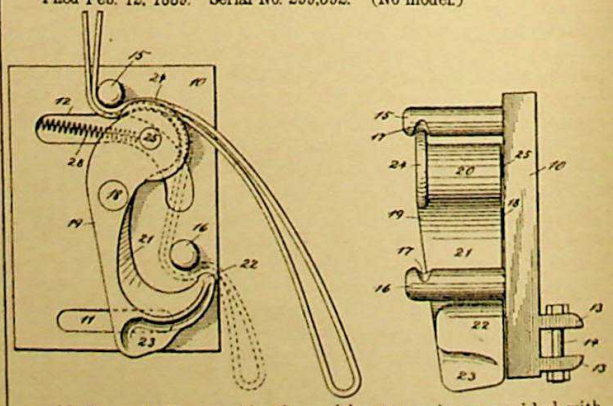
Claim.—The herein-described hay cap, roofing, and siding for temporary structures, consisting of the overlapping boards A, having perforations B at the ends near the lower edges thereof, and the single securing-wire C, passing over the outer surface of the one board A and through the apertures B therein and down over the outer surface of the next board and throughout the series, and secured by its end loops c, as set forth, substantially as described.

404,578. PORTABLE COOKING STOVE AND UTENSILS. ALFRED S. TOMKINS, Holmwood, Caterham, County of Surrey, England. Filed Nov. 7, 1888. Serial No. 290,235. (No model.) Patented in England Sept. 22, 1888, No. 13,728.



Claim.—A portable cooking apparatus consisting of fire-place F, flues C C' C³, chimney C², ovens F', and boilers K, in combination with water-casing R, substantially as described.

404,579. REIN-HOLDER. WILLIAM F. TURMAN, Weatherford, Tex. Filed Feb. 12, 1889. Serial No. 299,592. (No model.)



Claim.—1. The combination, with a base-plate provided with spaced posts attached to one side thereof, of a lever pivoted to said

plate and provided with a cylindrical surface at one end and an essentially hook-shaped extremity at the opposite end adapted for engagement with the said posts, substantially as shown and described.

2. The combination, with a base-plate provided with spaced posts upon one surface, of a lever pivoted upon said base-plate, provided with a cylindrical surface at one end, with a flange integral with the outer face projecting beyond said cylindrical surface, and an essentially hook-shaped extension at the other extremity, all combined for operation substantially as shown and described.

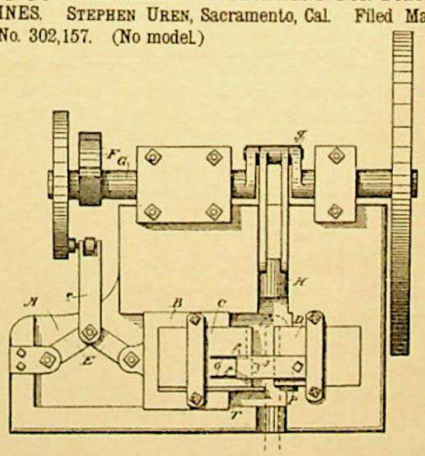
3. The combination, with a base-plate and spaced posts upon one face of the said plate grooved on their adjacent sides, of a spring-actuated lever provided with a cylindrical surface at one end and a flange projecting from the outer face beyond said surface, the opposite extremity of the lever being curved to form, essentially, a hook, the cylindrical surface being adapted for engagement with one post and the hook extremity with the other post, substantially as shown and described.

4. The combination, with a base-plate provided with a curved slot near one end and posts projecting at a right angle from one face of the plate at opposite sides of the said slot, of a lever pivoted below the slot, provided with a cylindrical upper end, and a flange projected from the outer surface beyond the said cylindrical end and grooved on their adjacent sides, and a concaved inner face terminating in a hook-extension, a stud projected downward from the lever through the curved slot, and a spring secured to one wall of the slot and to the said stud, all combined for operation substantially as specified.

5. The combination, with a base-plate provided with a curved slot near one end, a transverse slot near the opposite end, a rib or flange extending downward from the under face of the said base-plate at each side of the transverse slot, and posts projected from the outer face of the said base-plate at opposite sides of the curved slot, of a lever pivoted upon the outer face of the base-plate, provided with an upper cylindrical end surface, and a flange projecting from the outer face beyond the cylindrical surface, a concave inner face, and a hook-extension at the lower end continuous with the said concave inner side, a stud projected downward from the inner face of the lever through the curved slot, and a spring connected with one wall of the slot and the said stud, substantially as shown and described.

404,580. SLOT-MAKING ATTACHMENT FOR BOLT-HEADING MACHINES.

STEPHEN UREN, Sacramento, Cal. Filed Mar. 6, 1889. Serial No. 302,157. (No model.)



Claim.—1. In a bolt-heading machine and in combination with its dies, between which the bar is clamped, a fixed punch in one die adapted to make a slot or keyway in the end of the bolt, a punchway in the other die for receiving the punch after it passes through the bolt, and a guard-plate for preventing the bolt from spreading, substantially as described.

2. In a bolt-heading machine and in combination with its dies, between which the bar is clamped, a fixed punch in one die adapted to form a slot or keyway in the end of the bolt, a fixed guard-plate above and below said punch for preventing the bolt from spreading as the punch passes through it, and suitable ways in the opposing die for receiving the punch and guard-plates, substantially as described.

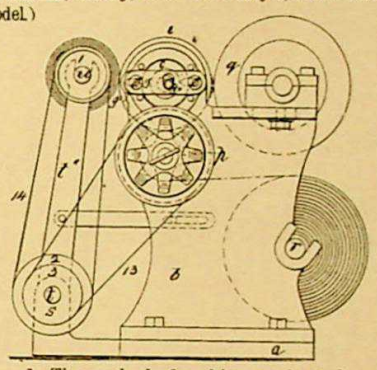
3. In a bolt-heading machine, the movable die C and the fixed die D, between the faces of which the bar is clamped, and a reciprocating plunger for upsetting the end of the bar to form the head of the bolt, in combination with the punch-strip secured in and projecting from the face of the movable die and adapted to make the slot or keyway in the end of the bolt, the punchway in the opposing face of the fixed die adapted to receive the punch-strip, and a guard-plate for preventing the bolt from spreading, substantially as described.

4. In a bolt-heading machine, the movable die C and the fixed die D, between which the bar is clamped, and the reciprocating plunger for upsetting the end of the bar, in combination with the punch-strip projecting from the face of the movable die and adapted to make a slot or keyway in the end of the bolt, the projecting guard-plates above and below said punch-strip and secured to the movable die, and the ways in the opposing fixed die for receiving the punch-strip and the guard-plates, substantially as described.

5. In a bolt-heading machine and in combination with the opposing dies by which the bar is gripped and held, said dies being made in two parts, as described, in combination with the independent guard-plates secured between the parts of one of the dies and projecting from its face, the independent punch-strip secured between said guard-plates and projecting from the face of the die, and the grooved punch-way-shoes secured between the parts of the opposing die, substantially as described.

404,581. METHOD OF MAKING PERFORATIONS IN PAPER.

SETH WHEELER, Albany, N. Y. Filed May 2, 1885. Serial No. 164,196. (No model.)



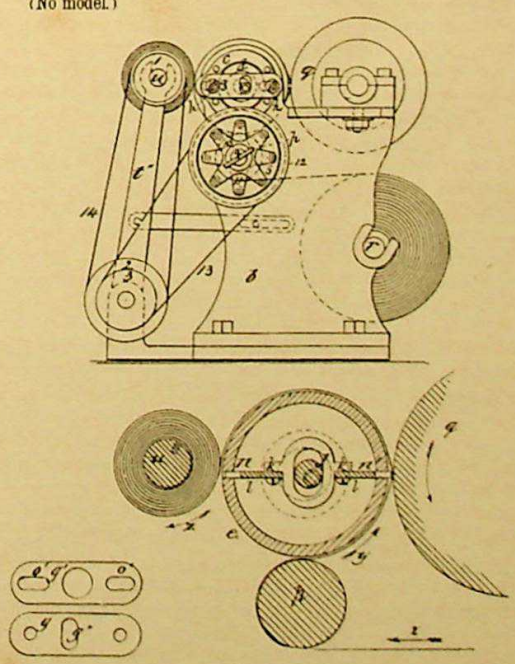
Claim.—1. The method of making perforated tearing-lines in paper, consisting of presenting plain paper to an abrading-surface and thereby grinding away portions of the paper in the lines desired, substantially as described.

2. The method of making perforated tearing-lines in paper, consisting of projecting plain paper by a series of teeth against a rotating abrading-surface and thereby grinding away the paper on said teeth, substantially as described.

3. The method of making perforated transverse tearing-lines in a web of paper, consisting of continuously moving the web and intermittingly projecting it by a series of teeth against a rapidly-moving abrading-surface and thereby grinding away the paper on said teeth, substantially as described.

404,582. MACHINE FOR MAKING PERFORATIONS IN PAPER.

SETH WHEELER, Albany, N. Y. Filed May 2, 1885. Serial No. 164,197. (No model.)



Claim.—1. In a paper-perforating machine, the roller having an abrading-surface, in combination with the rotating cylinder carrying the intermittingly-projected teeth, substantially as described.

2. In a paper-perforating machine, the roller having an abrading-surface, in combination with the rotating cylinder, the eccentric shaft, and the plates having teeth intermittingly projected, substantially as described.

3. In a paper-perforating machine, the roller having an abrading-

surface, in combination with the rotating cylinder, the adjustable eccentric shaft, and the plates having teeth intermittingly projected, substantially as described.

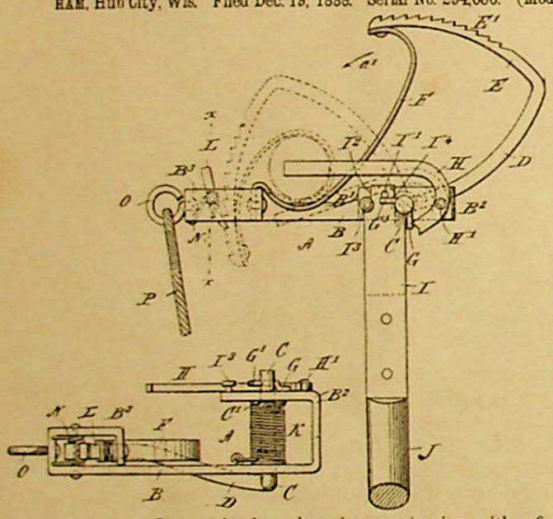
4. In a paper-perforating machine, the roller having an abrading-surface and the cylinder in which are mounted intermittingly-projected teeth, in combination with the rotating feeding and winding rolls by which a web of paper is continuously fed between said roller and cylinder, substantially as described.

5. In a paper-perforating machine, the combination of a roller having an abrading-surface, the cylinder carrying intermittingly-projected teeth, the feed-roll, the winding-roll having a friction-pulley on its shaft, and the driving-belts, substantially as described.

6. In a paper-perforating machine, the roller having an abrading-surface and the cylinder carrying intermittingly-projected teeth, in combination with the feeding-roll, the winding-roll and its adjustable friction-pulley, and the driving-belts, substantially as described.

7. The combination, with an abrading-roll, of a cylinder containing slots *n* and *n'*, through which project teeth *m* and *m'*, constructed on plates, such plates being attached to yokes, a shaft *f* set eccentric to the cylinder *e* and the plates *g g g' g'*, so that the teeth *m m'* will alternately project beyond the periphery of the cylinder *e* when opposite the periphery of the abrading-roll *q* and be withdrawn within such slots during the remainder of the revolution of such cylinder, substantially as described.

404,583. DEVICE FOR CATCHING ANIMALS. THOMAS WICKHAM, Hub City, Wis. Filed Dec. 19, 1888. Serial No. 294,036. (Model.)



Claim.—1. In an animal-catcher, the combination, with a frame, of a segmental arm fulcrumed on the said frame and actuated by a spring, and a band secured to the said frame and the said segmental arm, substantially as shown and described.

2. In an animal-catcher, the combination, with a frame, of a segmental arm fulcrumed on the said frame and actuated by a spring, a band secured on the said segmental arm and the said frame, and a tripping device for locking the said segmental arm in an open position, substantially as shown and described.

3. In an animal-catcher, the combination, with a frame, of a segmental toothed arm fulcrumed on the said frame and actuated by a spring, a band secured to the said frame and the said segmental arm, and a spring-pawl fulcrumed on the said frame and adapted to engage the said toothed segmental arm, substantially as shown and described.

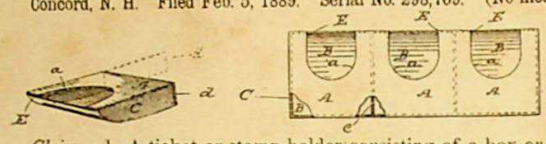
4. In an animal-catcher, the combination, with a frame, of a segmental toothed arm fulcrumed on the said frame and actuated by a spring, a band secured to the said frame and the said segmental arm, a spring-pawl fulcrumed on the said frame and adapted to engage the said toothed segmental arm, and a rope connected with one end of the said frame, substantially as shown and described.

5. In an animal-catcher, the combination, with a frame, of a segmental toothed arm fulcrumed on the said frame and actuated by a spring, a band secured on the said segmental arm and the said frame, a spring-pawl fulcrumed on the said frame and adapted to engage the said toothed segmental arm, and a handle for holding the said frame and adapted to be detached, substantially as shown and described.

6. In an animal-catcher, the combination, with a frame and a handle held on the said frame and adapted to be detached, of a shaft mounted to turn in the said frame and actuated by a spring, a tripping-arm held on the said shaft and adapted to hold the said handle in place, a tripping-lever fulcrumed on the said frame and engaged by the said tripping-arm, a segmental arm held on the said shaft, and a band secured to the said segmental arm and the said frame, substantially as shown and described.

7. In an animal-catcher, the combination, with a frame and a handle held on the said frame and adapted to be detached, of a shaft mounted to turn in the said frame and actuated by a spring, a tripping-arm held on the said shaft and adapted to hold the said handle in place, a tripping-lever fulcrumed on the said frame and engaged by the said tripping-arm, a segmental arm held on the said shaft, a band secured to the said segmental arm and the said frame, and a spring-pawl fulcrumed on the said frame and adapted to engage notches in the said segmental arm, substantially as shown and described.

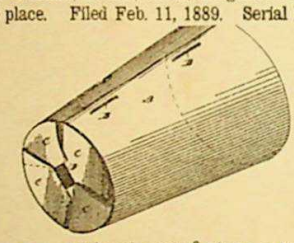
404,584. TICKET AND STAMP HOLDER. ALFRED WILLIAMSON, Concord, N. H. Filed Feb. 5, 1889. Serial No. 298,709. (No model.)



Claim.—1. A ticket or stamp holder consisting of a box or case having vertical sides and back, the latter being open, a flat top having a curvilinear opening at its front, a curved bottom converging to a point adjacent with the front edge of said top, whereby a slot is formed for the extraction of a single ticket or stamp, and a hinged cap for normally closing the open back of said box or case, all substantially for the purpose set forth.

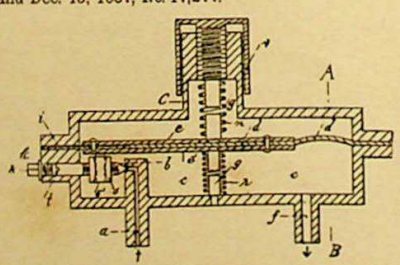
2. A ticket or stamp holder consisting of a box or case having vertical sides and back, the latter being open, a flat top having a curved opening at its front, a curved bottom converging to a point adjacent with the front edge of said top for the extraction of a single ticket or stamp, and a hinged cap for normally closing the open back, and the curvilinear opening in the flat top of said box or case.

404,585. COMBINED POT AND PROTECTOR FOR SEEDLINGS, &c. WILBUR L. WRIGHT, Bristol, Conn., assignor of one-half to Sigourney Bros., same place. Filed Feb. 11, 1889. Serial No. 299,390. (No model.)



Claim.—As a new article of manufacture, a combined pot and protector for seedling and other plants, made of paper and having a folded bottom, the folds whereof are adapted to be pulled out when the plant is set out, so as to permit the pot to be pulled up over and away from the roots of the plant and form a protector for the stem and leaves thereof.

404,586. PRESSURE REGULATING OR REDUCING VALVE. EMIL ANDRE, Hanover, Germany, assignor to Franz Heuser & Co., same place. Filed May 17, 1888. Serial No. 274,180. (No model.) Patented in Germany May 15, 1886, No. 40,647, and Mar. 3, 1887, No. 42,305; in France June 24, 1886, No. 176,992; in Belgium Apr. 26, 1887, No. 77,223; in Austria-Hungary July 22, 1887, No. 8,814 and No. 30,450, and in England Dec. 15, 1887, No. 17,277.

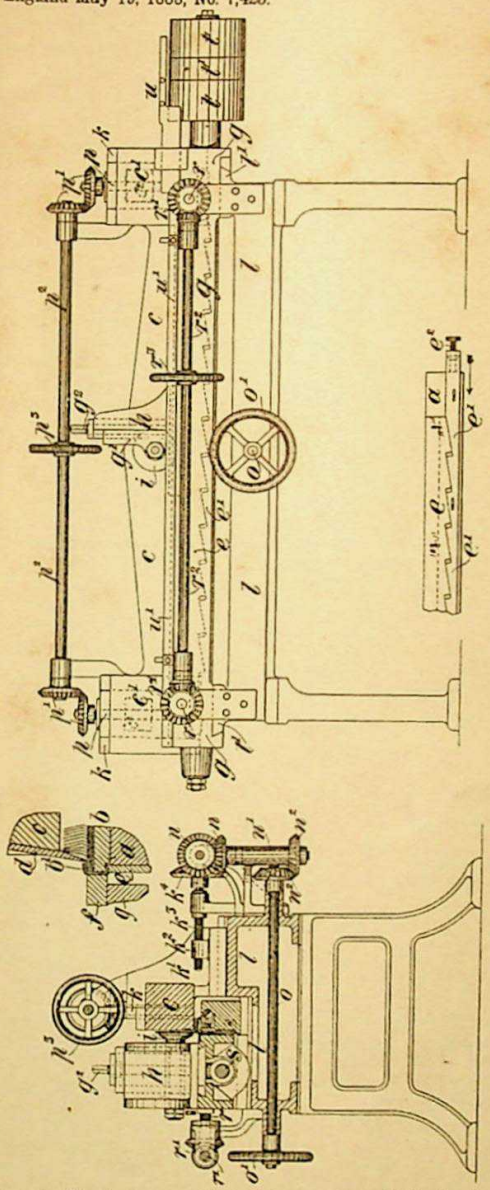


Claim.—1. In a pressure-regulator, the combination, with the casing, of a flexible diaphragm provided with stiffening-plates and a spring secured at one end to the casing, a valve connected with the diaphragm, two springs in positions to press, respectively, the opposite sides of the diaphragm, and a screw-cap by which one of said springs may be compressed, substantially as described.

2. The combination, with a flexible diaphragm *d*, which is provided with stiffening-plates, of a spring *i*, connected with the casing, a valve *b*, provided with a nut *s*, and a collar *s'*, which is firmly connected with the diaphragm, substantially as and for the purposes described.

3. In combination with the casing provided with an aperture and a screw-plug to close the same, a needle-valve *b*, which extends into said aperture, a flanged nut on said valve, a collar placed loosely on said nut, and a flexible diaphragm with which said collar is firmly connected, substantially as set forth and described.

404,587. MACHINE FOR SECURING CLOTHING TO CARDING-ENGINES. ELIJAH ASHWORTH, Manchester, County of Lancaster, England. Filed July 10, 1888. Serial No. 279,513. (No model.) Patented in England May 19, 1888, No. 7,425.



Claim.—1. The bar *c*, provided with a comb or blade *d* and vertically and horizontally sliding carriages carrying the said bar, in combination with a vise or bed for holding the carding-engine flat-bar while the said comb or blade is pressed down upon the fabric of the card-clothing on such flat-bar and is moved in a direction across the flat-bar to stretch the said fabric, substantially as set forth.

2. The combination, with a vise or bed for holding a carding-engine flat-bar, of the bar *c*, provided with a comb or blade, carriages *k'*, upon which the bar is mounted to slide in a direction at right angles to the face of the flat-bar, feed-screws for the bar, devices connecting the feed-screws to operate them together, feed-screws to move the carriage in a direction parallel with the face of the flat-bar, and devices, substantially as described, connecting these latter feed-screws to operate them together, substantially as and for the purpose set forth.

3. The combination of a vise or bed for holding the carding-engine flat-bar, a clamp for holding a clip to the under side of the flat-bar, and mechanism for bending the upper flange of the clip, with a clamping-plate *f*, a carriage *g*, upon which the plate is mounted and which can be moved toward and from said flat-bar, and coupled screws for moving the carriage to and fro and maintaining its parallelism with the edge of the flat-bar, all substantially as set forth.

4. The combination of a vise or bed for holding a carding-engine flat-bar with a clamping-plate *e* to hold a metal clip to the under side of the bar, means for pressing the said clamping-plate upward toward the back of the flat-bar, and mechanism, substantially as set forth, for bending the clip down onto the upper side of the bar, all substantially as set forth.

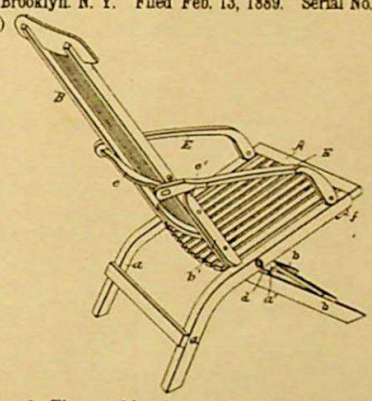
5. The combination of a vise or bed for holding a carding-engine flat-bar with a bar having a comb or blade to hold down the fabric of the card-clothing upon the said bar, a clamping-plate *e* and means for pressing it up toward the back of the bar, a clamping-plate *f* to hold the metal clip against the edge of the bar, and mechanism for bending the clip down onto the edge of the card-clothing.

6. The combination of a vise or bed for holding a carding-engine flat-bar with a bar having a comb or blade to hold the card-clothing in position upon the bar, clamps for holding a metal clip against the edge and back of the bar, and a rotating pressing-disk and a sliding carriage carrying the disk to close down the upper flange of the clip upon the margin of the card-clothing, substantially as set forth.

404,588. BRUSH. CHARLES J. BAILEY, Newton, Mass. Filed Nov. 9, 1888. Serial No. 290,357. (No model.) Patented in England Oct. 27, 1887, No. 14,620; in France Oct. 27, 1887, No. 186,625; in Canada Nov. 3, 1887, No. 27,929, and in Belgium June 6, 1888, No. 82,074.

Claim.—The back *a* and the cylindrical flat-ended teeth *b*, made integral with the back and of soft or flexible rubber and constituting a brush soft or flexible throughout, substantially as described.

404,589. FOLDING CHAIR FOR STEAMERS, &c. CHARLES F. BATT, Brooklyn, N. Y. Filed Feb. 13, 1889. Serial No. 299,702. (No model.)



Claim.—1. The combination of the seat and back of a folding chair pivoted together, with side arms connected to the seat and resting upon supports on the chair-back, and having a brace resting against the rear of the side bars of the latter to support the seat, substantially as described.

2. The combination of the seat and back of a folding chair pivoted together, with side arms pivoted to the seat and resting upon supports on the chair-back and provided with stops near their ends which engage with the rear edges of the side bars of the back to support the seat, the said side arms hanging down behind the back when the chair has been folded up with the seat against the back, all substantially as described.

3. The combination of the seat and back of a folding chair pivoted together, with side arms pivoted to the chair-seat near the front of the latter, the side arms having supports on the chair-back, and being connected together behind the latter by a cross-brace bearing on said back to support the seat, substantially as described.

4. The combination of the seat and back of a folding chair pivoted together, with front legs forming a continuation of the chair-back, and back legs forming a continuation of the chair-seat, and side arms pivoted to the chair-seat and resting upon supports on the chair-back, and having a cross-brace behind the latter to support the seat, all substantially as described.

5. The combination of the seat of a folding chair with side arms connecting the seat with the back, and headed bolts passing through the seat and pivot-pins connecting the bolts with the ends of the arms, substantially as described.

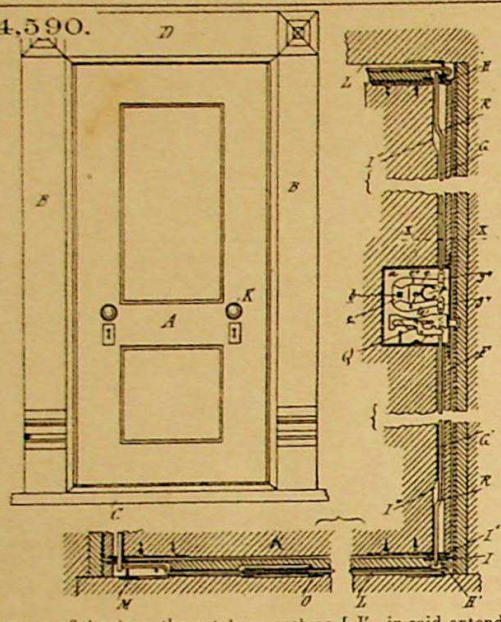
404,590. COMBINED DOOR LOCK AND HINGE. LOUIS BINSFELDT and JOHN CHATEAU, Detroit, Mich. Filed Dec. 10, 1888. Serial No. 293,089. (No model.)

Claim.—1. A combined door lock and hinge, consisting of vertical rods normally extended and adapted to enter suitable apertures in the threshold and top rail of a door-frame, combined with a latch arranged at right angles to said rods to engage the extended ends thereof, substantially as described.

2. A combined door lock and hinge, consisting of two pairs of vertical rods, a spring adapted to normally expand them, suitable apertures in the threshold and top rail, and spring-catches adapted to engage with the extended ends of the rods, substantially as described.

3. In a combined door lock and hinge, the combination of two pairs of vertical rods normally extended by a spring beyond the top

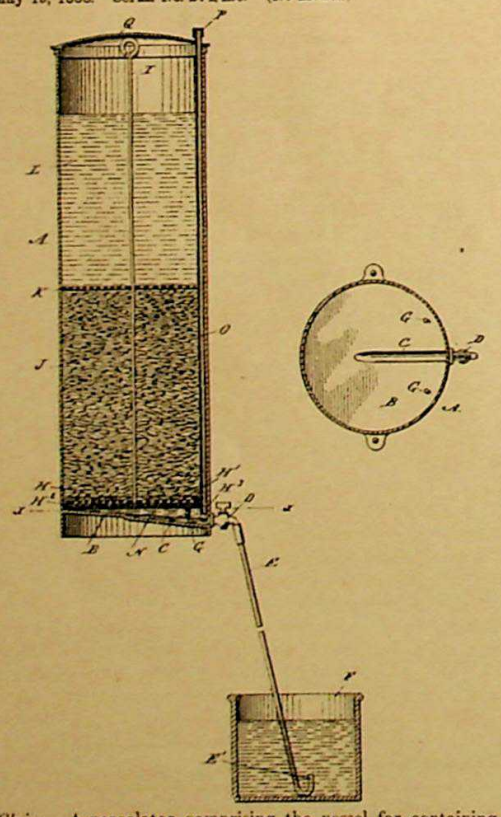
404,590.



and bottom of the door, the notches—such as J J'—in said extended portions, the spring-latches K', adapted to engage in said notches, and suitable latch mechanism for operating the vertical rods, substantially as described.

4. In a door provided upon both edges with vertical grooves, caps or moldings, two pairs of spring-actuated rods in said grooves adapted to be used as a lock or hinge for the door, combined with spring-catches movable at right angles to said rods, substantially as described.

404,591. PERCOLATOR. THOMAS BOYCE, New York, N. Y. Filed May 19, 1888. Serial No. 274,420. (No model.)

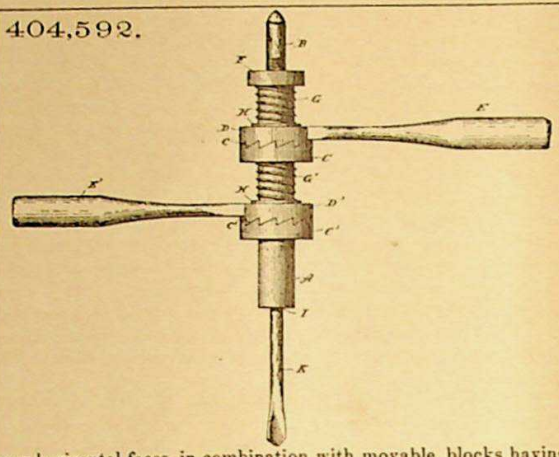


Claim.—A percolator comprising the vessel for containing the menstruum and drug, having the chamber in its bottom under the strainers, a suction-tube leading down into the chamber and having a closure at its upper end, a discharge-cock leading from the chamber, and a tube depending from said cock and provided with an upward bend at its lower end, substantially as set forth.

404,592. RATCHET-DRILL. HENRY BRINKMANN, Philadelphia, Pa. Filed Feb. 25, 1889. Serial No. 301,022. (No model.)

Claim.—1. In a ratchet-drill, a stem and permanent blocks rigidly secured thereto, said blocks having recesses cut into their up-

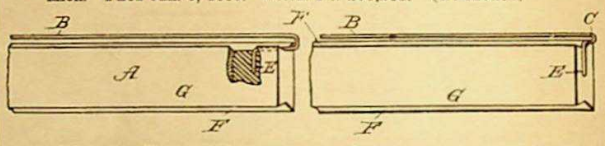
404,592.



per horizontal faces, in combination with movable blocks having recesses cut into their lower horizontal faces and adapted to correspond with the ratchet formed by the recesses in said permanent blocks, said movable ratchet-blocks having handles rigidly secured to them, substantially as described.

2. In a ratchet-drill, a stem having ratchet-blocks rigidly secured thereto, said rigid blocks having recesses cut in their upper faces, in combination with movable ratchet-blocks adapted to rotate upon said stem and resting on the tops of said rigid blocks, and coiled springs on the tops of said movable blocks for holding said movable blocks in place independently, said movable blocks provided with handles rigidly secured thereto, substantially as described.

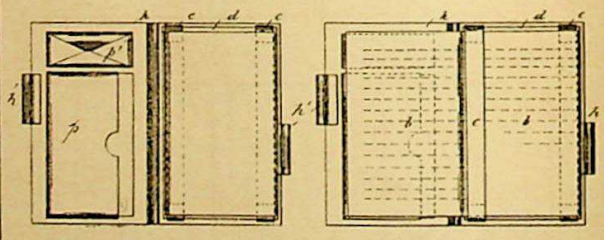
404,593. RULER. ARTHUR BROWN and PETER C. PAYETTE, Detroit, Mich. Filed Jan. 3, 1889. Serial No. 295,283. (No model.)



Claim.—1. The combination of a ruler grooved on both its edges and a metal straight-edge secured to the ruler and projecting centrally therefrom, one of the grooved edges of said ruler having inches and fractions of inches indicated thereon, substantially as described.

2. The combination, with a ruler grooved on both its edges, of a metal straight-edge set out centrally therefrom and secured to said ruler at its ends only, substantially as described.

404,594. PAPETERIE. ADOLPH BÜHLER, Reichenhall, Bavaria, Germany. Filed Sept. 14, 1888. Serial No. 285,421. (No model.)



Claim.—1. The combination, with a package of double sheets of letter-paper or of a plurality of superposed envelopes arranged with their sealing-flaps overlapping one another, of a holder *c*, of greater length than the paper or envelopes, and inserted between the two pages of the inner sheet of paper or under the flap of the upper envelope of the package along the fold thereof, and a backing of more or less rigid material to which said holder is secured, as described, for the purposes specified.

2. A block of letter-paper comprising a backing of more or less rigid material, a plurality of superposed packages of double-sheet letter-paper, said packages being arranged with their folded portions alternating with the edges of the sheets, and a holder *c* for each package inserted in the inner sheet along the fold thereof, the ends of said holder being secured to the backing, as described, for the purposes specified.

3. The combination, with a package of envelopes arranged with their sealing-flaps overlapping one another, of a holder consisting of a strip *c*, of more or less flexible material, provided with a slit or slot for the passage of said sealing-flaps, and a backing to which the strip *c* is secured, as described, for the purposes specified.

4. The combination, with two packages of envelopes *e*, arranged relatively to each other, as described, the holder or holders *c* for said packages, and a backing, of more or less rigid material, to which said

holder or holders are secured, of a fastener secured to said backing and arranged to overlap the contiguous edges of the packages of envelopes, substantially as described, for the purposes specified.

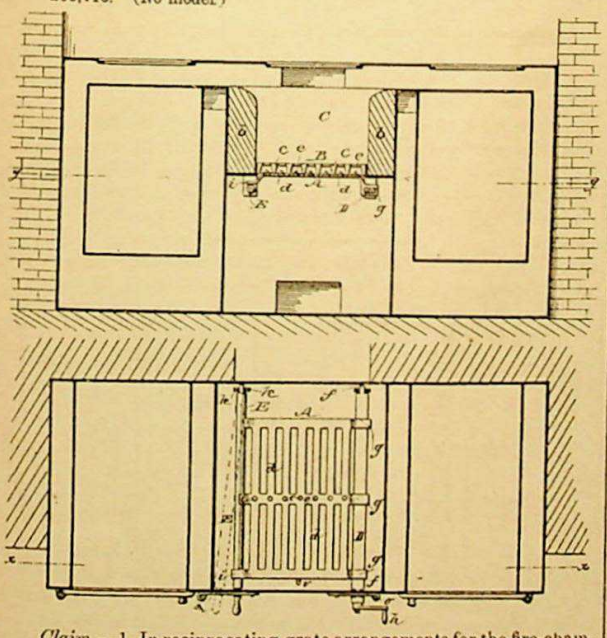
5. A block of letter-paper or envelopes comprising a plurality of superposed packages of such, arranged as described, and the holders *c* for the individual packages, and a backing or wrapper to which said holders are secured, said backing or wrapper being constructed to inclose the block of paper or envelopes, substantially as described, for the purposes specified.

6. The herein-described article of papeterie, comprising a doubled or folding wrapper, a block of envelopes consisting of a series of packages of such, holders for each individual package secured to the wrapper, as described, and a block of letter-paper consisting of a plurality of packages of such, holders for each individual package thereof, and a backing to which said holders are secured, said parts being arranged and combined substantially as described, and for the purposes specified.

7. The herein-described article of papeterie, comprising a double or folding wrapper *h*, provided on its edges with loops *h'*, a block of envelopes consisting of a series of packages *e* of such, holders for each individual package secured to the wrapper, and a block of letter-paper consisting of a plurality of packages *a* of such, holders for each individual package thereof, and a backing to which said holders are secured, said parts being arranged and combined substantially as shown and described, and for the purposes specified.

8. The herein-described article of papeterie, comprising a double or folding wrapper *h*, provided on two of its meeting edges with loops *h'*, and on one-half of its inner face with receptacles *p* and *p*, a block of envelopes consisting of a plurality of packages *e* of such, holders for each individual package secured to the wrapper, and a block of letter-paper consisting of a plurality of packages *a* of such, holders for each individual package thereof, and a backing *d*, to which such holders are secured, said parts being arranged and combined substantially as shown and described.

404,595. GRATE FOR RANGES, STOVES, OR FURNACES. SALVATORE J. BUZZINI, New York, N. Y. Filed Feb. 13, 1889. Serial No. 299,710. (No model.)

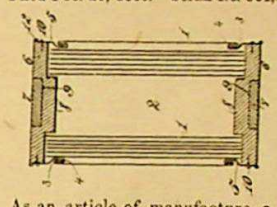


Claim.—1. In reciprocating-grate arrangements for the fire-chambers of ranges and other heating structures, the combination, with the reciprocating fire-grate A, composed of a series of connected parallel grate-bars *a*, all made to reciprocate in common, of the bed-plate B of the fire-chamber, beneath which the upper surfaces of said bars at their ends work, provided on its opposite sides, which are transverse to the line of motion of the grate, with projections *c*, arranged to enter down between the grate-bars, whereby and without specially constructing the grate-surface for the purpose fuel is prevented from being carried by the reciprocating grate beneath the bed-plate to jam or interfere with the free motion of the grate, essentially as shown and described.

2. In a shaking grate for ranges and other heating structures, the combination, with the bed-plate of the fire-chamber, of the reciprocating grate arranged below said bed-plate and provided with one or more clips on its one side and one or more toe rests or supports on its opposite side, a rocking bar fitted to pass loosely through the clip or clips of the grate and adapted to rock or turn the grate in common with it, and a laterally-movable rod or lever on the opposite side of the grate adapted to pass either under or from beneath the toe rests or supports of the grate, substantially as specified.

3. The combination, in a range or other heating structure, of the reciprocating and laterally-dumping grate A, provided with socket-like clips *g* on its one marginal side and toe-rests *i* on its opposite marginal side, the laterally-adjustable rod or lever E on the toe-rest side of the grate, and the rocking bar D, adapted to pass loosely through said clips and to turn the grate in common with it and detachably fitted to its place and through the clips, whereby the grate may be readily removed when required, substantially as specified.

404,596. SHEET-METAL PACKAGE. FRANK G. CALDWELL, Wheeling, W. Va. Filed Feb. 25, 1889. Serial No. 301,070. (No model.)



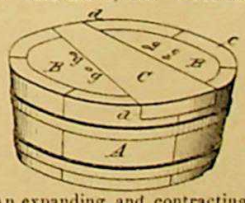
Claim.—1. As an article of manufacture, a sheet or sheets of metal rolled into cylindrical form and having folds or laps formed on the side edges of the outer portion of the outer sheet and surrounded at each end with metal guards having lapped or folded edges that engage the folds or laps on the metal sheet, said guards being also secured to wooden cross-pieces at the ends of the roll, substantially as described.

2. As a new article of manufacture, a sheet or sheets of metal rolled into cylindrical form and having folds or laps formed on the side edges of the outer portion of the outer sheet and surrounded at each end with metal guards having lapped or folded edges that engage the folds or laps on the metal sheet, said guards being secured to wooden cross-pieces at the ends of the roll, and the inner cross-pieces being provided with circular blocks or projections that are closely surrounded by the metal sheet or sheets, substantially as described.

3. The combination, with a sheet-metal roll, of the metal guards 5, engaging the side edges of the outer portions of the outer sheet of said roll, and the wooden cross-strips 6 and 7 at the ends of the roll and secured to said guards, substantially as described.

4. The combination, with a sheet-metal roll, of the metal guards 5, engaging said roll at both ends, the recessed wooden strips 6, having blocks or projections 8, entering the said roll, and the wooden strips 7, engaging the recesses in the strips 6, said strips being secured to the metal guards, substantially as described.

404,597. COVER FOR BUTTER-TUBS, &c. HENRY C. CARTER, New York, N. Y. Filed Mar. 5, 1889. Serial No. 301,947. (No model.)



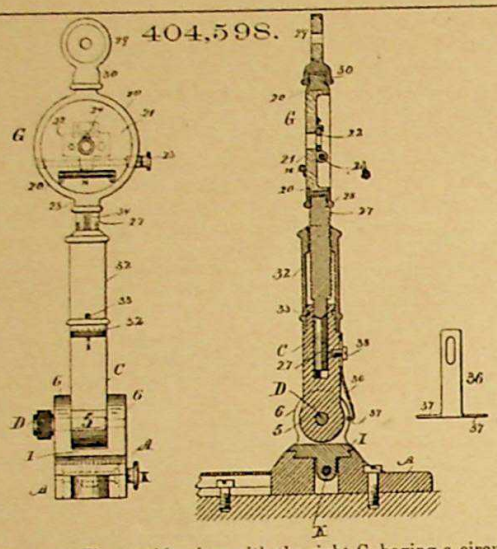
Claim.—1. An expanding and contracting cover for tubs and other vessels or packages, composed of independent side sections, a sliding wedge-shaped section in between the side sections, secured to the latter by slotted attachments, and pins or studs controlling the movement of the wedge-section and side sections relatively to each other, substantially as specified.

2. In sectionally-constructed covers for tubs and other vessels or packages, the sections B B, having grooves *f* in their inner edges, in combination with the intermediate sliding web-section C, provided on each of its opposite edges with a longitudinally-slotted web adapted to fit within the grooves *f*, and pins or studs *g*, passing through said slotted webs and securing the several sections together and controlling their movement relatively to each other, essentially as described, and whereby the wedge-section is made to form a handle for lifting and placing the cover, as set forth.

3. In combination with a tub or vessel provided with a shoulder *b* and projecting inner beveled end rim *c*, having opposite recesses *d d* in it, the cover-sections B B, correspondingly beveled on their outer edges to lock with said rim, the intermediate sliding wedge-shaped section C, secured to the side sections by slotted attachments, and pins or studs controlling the movements of the several cover-sections, substantially as specified.

404,598. SIGHT FOR FIRE-ARMS. JAMES W. CARVER, Pawlet, Vt., assignor of two-thirds to Gibbons L. Kelty, Brooklyn, N. Y. Filed Nov. 24, 1888. Serial No. 291,731. (No model.)

404,598.



Claim.—1. The combination, with the sight G, having a circular rim 20, of a screw at the top thereof and a screw-socket 28 at the bottom of the screw-rod 27, and a support for the same, there being a screw-thread at the top fitting the socket 28 and the second sight 29, with a screw-socket 30 fitting either the screw on the ring 20 or on the standard 27, substantially as specified.

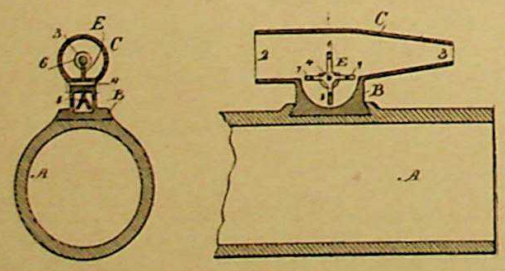
2. The standard C and base A, hinged together, the screw-rod 27, having a prismatic lower end and entering a corresponding longitudinal hole in the standard C, in combination with the sight supported by the rod 27, the tubular nut 32, surrounding the upper end of the standard C and acting upon the screw-threaded exterior of the rod 27, substantially as specified.

3. The combination, with the base A, joint-pieces 6, and hinge-pin D, of the standard C, through the lower portion of which the hinge-pin D passes, a spring 36, having T-shaped projections for passing into grooves in the hinge-pieces 6, and the attaching-screw passing through the slot in the spring, whereby the standard can be adjusted and held in a vertical position, substantially as set forth.

4. The combination, with the sight and the screw-rod 27, connected therewith, of the standard C, into which the lower end of the rod 27 passes, the tubular nut 32, surrounding the upper end of the standard and having an internal screw-thread receiving the screw-rod 27, there being divisions upon the standard C and upon the nut 32 and rod 27, for indicating the vertical adjustment of the sight, substantially as set forth.

5. The base A, having a transverse groove, in combination with the transverse slide I, adjusting-screw K, the standard C, hinged to the transverse slide, the tubular nut around the upper end of the standard, the screw-rod within the tubular nut and a sight attached to the screw-rod and adjusted vertically by the tubular nut, substantially as set forth.

404,599. SIGHT FOR FIRE-ARMS. JAMES W. CARVER, Pawlet, Vt., assignor of two-thirds to Gibbons L. Kelty, Brooklyn, N. Y. Filed Jan. 7, 1889. Serial No. 295,623. (No model.)



Claim.—1. The combination, with the bead or sight and the base that is connected with the gun-barrel, of a tubular shield surrounding the sight and having the rear end larger than the forward end, for the purposes and substantially as specified.

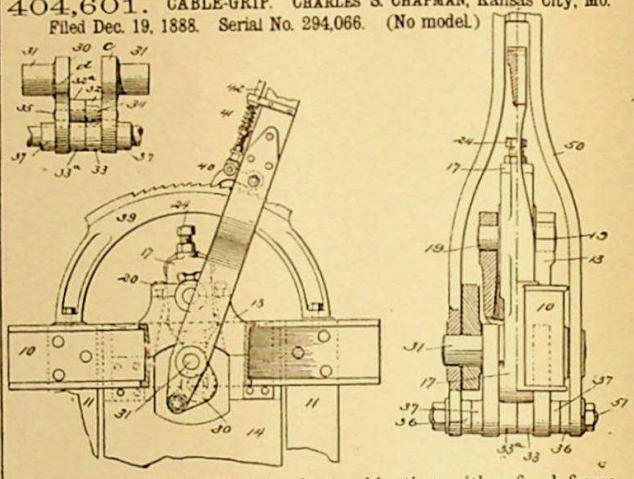
2. The combination, with the sight or bead and the base that is attached to the barrel, of a tubular shield surrounding the sight, the rear end of which is larger than the front end, and the rear portion of such shield is cylindrical, or nearly so, and the front portion tapering to the smaller end, substantially as set forth.

3. The combination, with the base, of the tubular shield the opening through which is larger at the rear end than at the front end, and a movable sight-holder within a channel or longitudinal groove in the base and having arms upon the ends of which are beads or sights of different sizes or shapes, substantially as specified.

404,600. DETERMINING THE TEMPER OF IRON OR STEEL. CARL A. CASPERSSON, Forsbacka, Marzretchill, Sweden. Filed Feb. 12, 1889. Serial No. 299,649. (No model.)

Claim.—A method of determining the temper of iron or steel, consisting in conducting an electric current through a sample or test-piece of the iron or steel the temper of which is to be determined, melting it off, and comparing the intensity of the current requisite with the strength of the current required to melt off pieces of normal steel of the same minimum cross-section as the sample and of known temper, either directly by placing the above-mentioned normal pieces in the same electric circuit or indirectly by the aid of an amperometer, substantially as described.

404,601. CABLE-GRIP. CHARLES S. CHAPMAN, Kansas City, Mo. Filed Dec. 19, 1888. Serial No. 294,066. (No model.)



Claim.—1. In a cable-grip, the combination, with a fixed frame to which the grip-heads are connected, of a movable frame arranged for connection with the toggles of the grip, a link pivoted in the movable frame, a crank pivoted in the fixed frame and pivotally connected to the lower end of the link, and a lever mounted upon the pivots of the crank and having the lower end of its short arm connected to the lower portion of the said crank, substantially as herein shown and described.

2. The combination, with a fixed frame arranged for connection with the heads of a grip and with a car-body or platform, of a movable frame arranged for connection with the grip-jaws, a crank carried by the fixed frame, a link connected to the crank and to the movable frame, a lever fulcrumed on the crank-trunnions and connected to the lower crank-arms, a pawl carried by the lever, and a toothed rack with which the pawl engages, substantially as described.

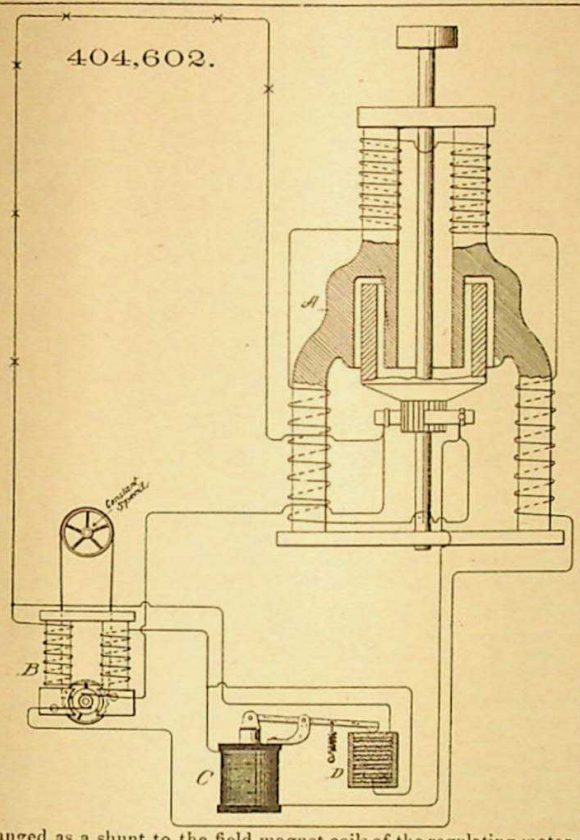
3. The combination, with a frame made up of castings that are bolted or riveted together, of shanks 11, held by the casting-uniting rivets, said shanks being arranged for connection with a grip-head, a body-sheet 14, arranged for connection with the grip-jaws, a casting 13, carried by said body-sheet, a crank 30, formed with trunnions 31, journaled in bearings formed in the castings first referred to, a link 17, pivotally connected to the crank, a cross-head carried by the link and journaled upon the casting 13, a lever fulcrumed upon the trunnions 31 and connected to the crank 30, a retaining-pawl carried by the lever, a rack with which said pawl engages, and a pawl-operating attachment, substantially as described.

404,602. REGULATOR FOR DYNAMO-ELECTRIC MACHINES. ERNEST P. CLARK, New York, N. Y., assignor to the Clark Electric Company, same place. Filed Oct. 8, 1888. Serial No. 287,498. (No model.)

Claim.—1. A regulator for a shunt-wound dynamo, consisting of an electromotor whose armature is maintained at a constant speed and is included in the field-magnet circuit of the dynamo, and whose field-magnet coils are included in the main circuit of the dynamo for the purpose of varying the counter electro-motive force of the motor as the main current varies in strength.

2. A regulator for shunt-wound dynamo-electric machines, having its armature included in the field-magnet circuit of the dynamo and its field-maget coils included in the main circuit, a variable resistance arranged as a shunt to the field-magnet coils of the regulator, and an electro-magnet in the main circuit arranged to control said variable resistance for the purpose of magnifying the variations in magnetic strength of the regulator field-magnets caused by changes in strength of the current in the main circuit.

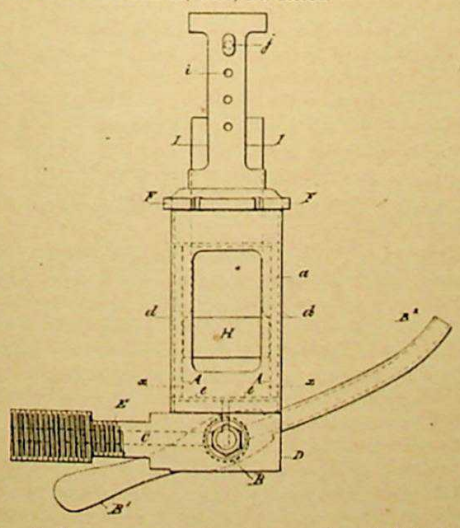
3. The combination of a dynamo-electric machine having its field-magnet coils in shunt or derived circuit, an electromotor maintained at a certain unvarying speed and having its armature in circuit with the field-magnet coils of the dynamo and its field-magnet coils in circuit with the lamps or other translating devices, a variable resistance



arranged as a shunt to the field-magnet coils of the regulating-motor, and an electro-magnet or solenoid located in the main circuit, controlling said variable resistance and so arranged as to intensify the variations in magnetism of the field-magnets of the regulator caused by variation in the main current for the purpose of maintaining a constant strength of current in the main or working circuit, notwithstanding variations in potential or a varying speed of the dynamo.

4. A regulator for a shunt-wound dynamo, consisting of an electromotor whose armature is included in the field-magnet circuit of the dynamo and whose field-magnet coils are arranged so that the full current on the main circuit of the dynamo will pass through them for the purpose of varying the counter electro-motive force of the motor as the main current varies in strength.

404,603. MEASURING-VESSEL. THOMAS S. COCKCROFT, Liverpool, County of Lancaster, assignor to John Goldie Chapman, Birkenhead, England. Filed Mar. 6, 1889. Serial No. 302,073. (No model.) Patented in England Oct. 13, 1887, No. 13,880.



Claim.—1. In apparatus of the character described for supplying gaged quantities of liquids, the combination of a measuring-vessel having a plunger movable therein and automatically raised by the pressure exerted by the liquid flowing by gravity into said measuring-vessel, a valve having radial ports and a longitudinal duct *b*, and a swinging lever-handle B′, fixed upon the outer end of the valve to oscillate in a vertical plane for turning the valve, said lever-handle containing a continuation of said valve-duct and provided with an attached discharge-nozzle B², that swings with the lever-handle and communicates with the duct therein, substantially as described.

2. In apparatus for supplying gaged quantities of liquids, the combination of the measuring-vessel A, having a valve-case provided with two separated ports *m* and *n*, arranged in alignment and having the lateral duct C, the oscillating valve B, having a longitudinal duct *b*, and two radial separated ports *k* and *l*, located out of alignment, and one of which is to communicate with the duct in the valve and the other with a supply-port in the valve-case, and a plunger H, automatically raised by the pressure of the liquid flowing by gravity into the measuring-vessel, substantially as described.

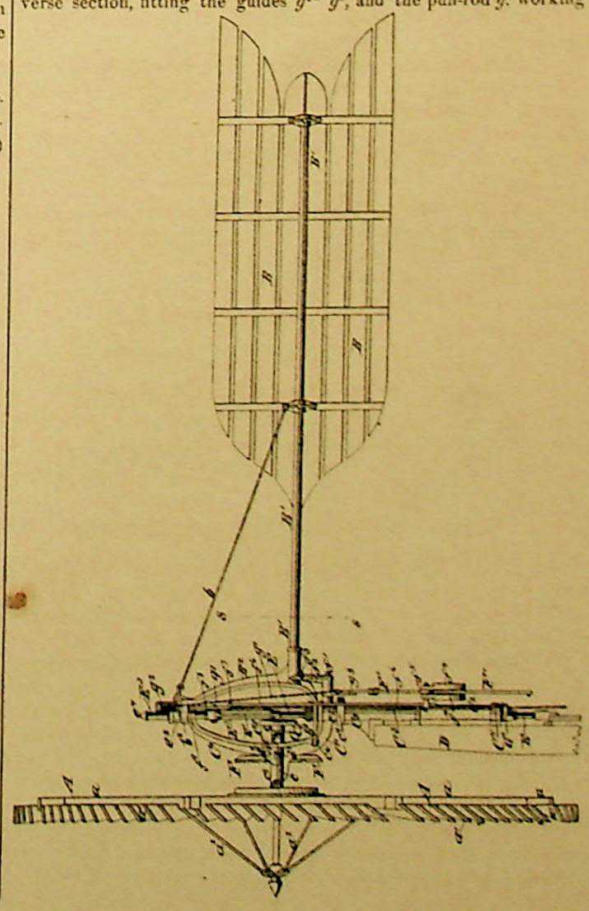
404,604. WINDMILL. ANDREW J. CORCORAN, Jersey City, N. J. Filed Mar. 19, 1888. Serial No. 267,599. (No model.)

Claim.—1. The combination, in a windmill, of a main frame having an upper vertical bearing, a reciprocating rod surmounted by an upper guide-rod fitting said bearing, the portion of the guide-rod working in said bearing being hollow to form a reservoir for lubricant, and having in its portion working in said bearing one or more lateral openings for the escape of lubricant to the bearing-surfaces, substantially as herein described.

2. The combination, in a windmill, of a tubular main pivot and surmounting frame, a hollow post or support wherein the pivot may turn, a reciprocating rod working through the pivot and having its transverse section such that its exterior surface is at different distances from its center in different directions, and guides for said rod having surfaces against which said rod bears, conforming in shape to the shape of the rod, said guides being secured on the pivot so as to move with the pivot, one of said guides being arranged near the top of said pivot and the other near the bottom thereof, substantially as specified.

3. The combination, in a windmill, of a tubular main pivot and a surmounting frame, a hollow post or support wherein the pivot may turn, a reciprocating rod working through the tubular pivot and having such a transverse section both near the top and the bottom of the pivot that its outer surface is at different distances from its center measuring in different directions from its center, a cap applied to one end of the pivot and having a guide fitting the said rod, and a cap applied to the other end of the pivot and turnable thereon, and having a bore or socket, and a guiding-bushing conforming in shape internally to the rod and turnable in said bore or socket to guide said rod without twisting, substantially as herein described.

4. The combination, with the main pivot C² and its surmounting frame C′, of the hollow support C³, the caps G G′, applied to opposite ends of the pivot, the cap G having a guide g^{10}, and the cap G′ having a guiding-bushing g^8, turnable within it, and both caps having the openings g^9, the reciprocating rod E, of square or analogous transverse section, fitting the guides g^{10} g^8, and the pull-rod *g*, working



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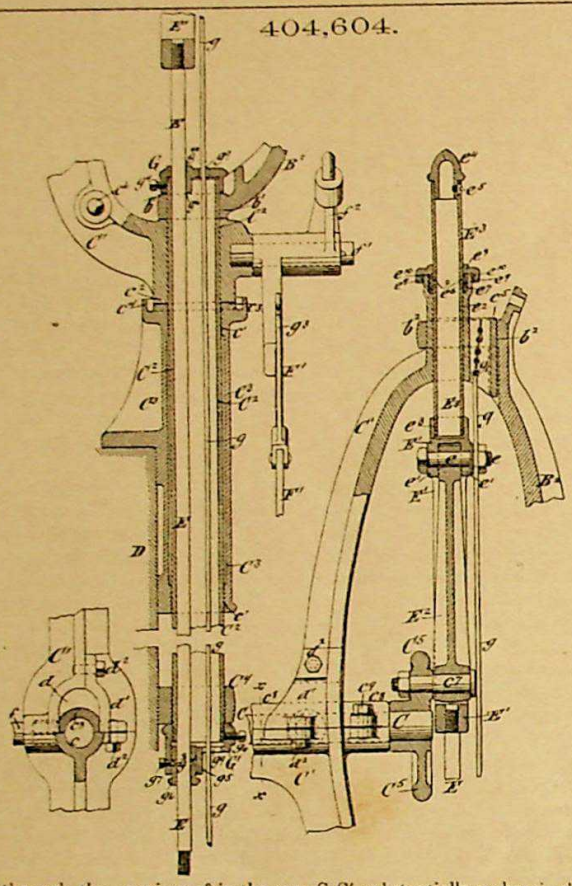
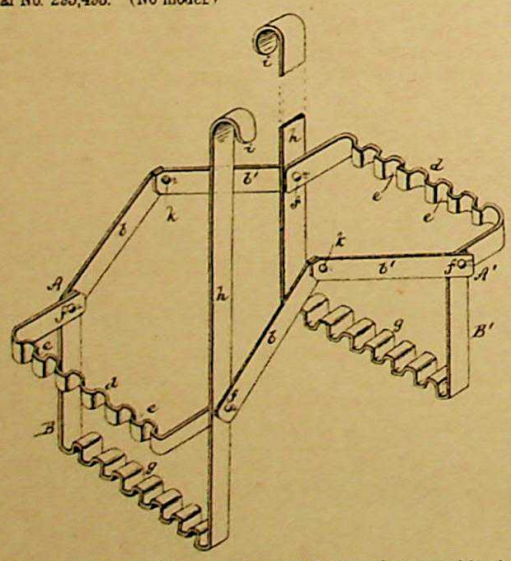


through the openings g^9 in the caps G G', substantially as herein de scribed.

5. The combination, with a wind-wheel A and a main shaft on which it is supported, of a main pivot C^2, and a surmounting main frame C', having a yoke *d*, wherein is the bearing for the main shaft, and one side of which is formed by a removable side piece, *d'*, and a cap for the said bearing held within the yoke and secured in place independently of the said removable side piece *d'*, substantially as herein described.

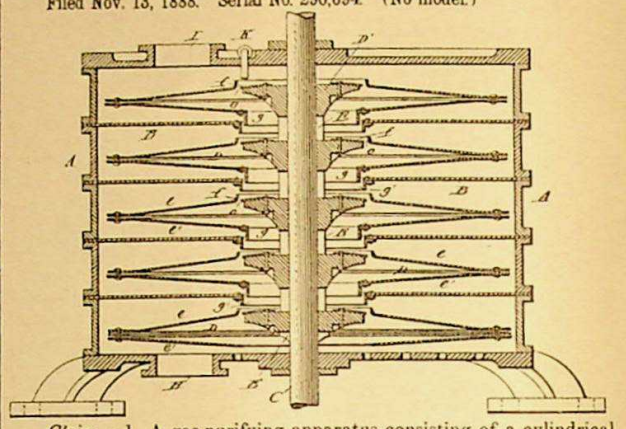
404,605. RACK FOR WASHING AND DRYING PHOTOGRAPHIC PLATES. WALTER S. CULLEN, Kearney, N. J. Filed Jan. 5, 1889. Serial No. 295,493. (No model.)



Claim.—1. In a rack for washing and drying photographic plates, the combination of an expansible and contractible main or body frame provided with opposite end strips having a series of plate-holding grooves in them and an open bottom support for the plates of U or stirrup shape construction pivoted to the main frame of the rack and capable of being closed into line therewith, essentially as specified.

2. In a rack for washing and drying photographic plates, the combination of the jointed or pivoted folding and angling side bars *b b'*, the lower frame-plate supports B B', having side arms, to which said side bars are pivoted at their outer ends, and the opposite pivoted end strips *d d*, having a series of plate-holding grooves in them, substantially as shown and described.

404,606. GAS-WASHER. JOSEPH DE BROUWER, Bruges, Belgium. Filed Nov. 13, 1888. Serial No. 290,694. (No model.)



Claim.—1. A gas-purifying apparatus consisting of a cylindrical casing provided with a lower plate having a gas-supply opening and exit-openings for the purifying-liquids, a vertical shaft journaled centrally of said casing, and a turbine mounted on said shaft in said casing and apertured in its top and bottom sections for the passage of said gas and purifying-liquids, substantially as shown and described.

2. A gas-purifying apparatus consisting of a cyliudrical casing provided with a lower plate having a gas-supply opening and exit-openings for the purifying-liquids and divided by fixed horizontal diaphragms having a central aperture into a series of overlying chambers, a vertical shaft journaled centrally of said casing, and a series of apertured horizontal drums mounted on said shaft to rotate in said chambers, the apertures in said drums being in the top and bottom sections thereof and in register with the diaphragm-aperture, whereby a vertical central passage is formed from end to end of the casing, substantially as set forth.

3. In a gas-purifying apparatus, the combination, with a cylindrical casing provided with a lower plate having a gas-supply opening and exit-openings for the purifying-liquids, and fixed horizontal centrally-apertured diaphragms dividing said casing into compartments, of a vertical shaft journaled in the casing and provided with horizontal drums rotating in said compartments, said drums consisting of upper and lower spaced plates or members, each having a central aperture or opening, the openings in the diaphragms registering with the openings in the upper members of the drums, substantially as set forth.

4. In a gas-purifying apparatus, the combination, with a cylindrical casing provided with a lower plate having a gas-supply opening and exit-openings for the purifying-liquids and horizontal centrally-apertured diaphragms dividing it into compartments, of a vertical shaft having horizontal drums rotating in said compartments, and each consisting of a hub and upper and lower spaced centrally-apertured members or plates, the openings in the lower members or plates registering with the diaphragm-openings to discharge through the upper opening of the next drum below upon the upper side of the hub therein, substantially as set forth.

5. In a gas-purifying apparatus, a purifying-drum consisting of a hub, and the centrally-apertured spaced concave members *e e'*, secured with their concave sides toward each other, the opening in the upper member *e* being of greater diameter than the hub, which in turn is of greater diameter than the opening in the member *e'*, substantially as set forth.

6. In a gas-purifying apparatus, the combination, with a cylindrical casing provided with a lower plate having a gas-supply opening and exit-openings for the purifying-liquids and horizontal centrally-apertured diaphragms forming a series of overlying compartments in said casing, said diaphragms having annular depending flanges *g'* around their openings, of a vertical shaft, horizontal two-part drums thereon within said compartments, the drums being formed of a hub having an annular deflector *f* on its upper face, and upper and lower centrally-apertured spaced parts *e e'*, the upper aperture having a diameter larger than the annular flange *g'* and the lower aperture having an annular flange *g*, entering the diaphragm-opening and of a smaller internal diameter than the deflector *f*, to discharge thereupon substantially as set forth.

404,607. RUNNER FOR GRINDING-MILLS. JOHN C. DELL, Philadelphia, Pa. Filed Jan. 25, 1889. Serial No. 297,497. (No model.)

Claim.—1. A runner having a wall formed with a throat, and a hub having an ear which is adapted to enter the runner through said throat, said ear being connected with the back of said wall within the runner and screwed or secured thereto, substantially as described.

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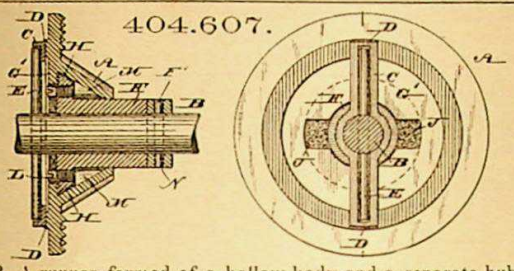


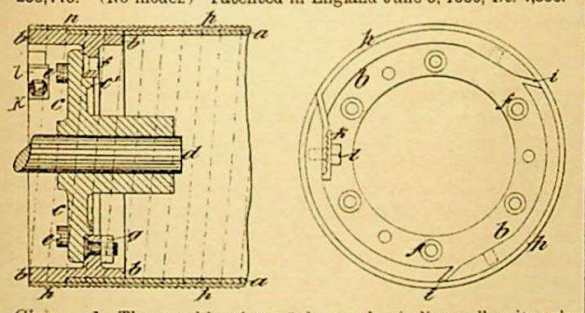
2. A runner formed of a hollow body and a separate hub, said body having a wall provided with a throat and an opening, and said hub having an ear which is secured to said wall by a screw which passes through said opening and enters said ear, substantially as described.

3. A runner with wall having a throat and an opening leading into a chamber in said runner, a hub with an ear in said chamber, a lug on the inner wall of said chamber, and a fastening-screw passing through said ear and bearing against said lug, said parts being combined substantially as and for the purpose set forth.

4. A runner with wall having a throat and opening leading into an inner chamber, a hub with ear in said chamber, a shaft on which the hub is mounted, and a key encircling the shaft and having its ends in the recesses in the walls of the runner, said parts being combined substantially as described.

5. A runner with wall having a throat and an opening leading into a chamber in said runner, a hub with an ear, a shaft on which the hub is mounted, a key encircling the shaft and having its ends in recesses in the runner, and a spring-bar passing through an opening in the shaft and seated in a recess in the key, said parts being combined substantially as and for the purpose set forth.

404,608. CARD-GRINDING ROLLER. JOSEPH S. DRONSFIELD, Oldham, County of Lancaster, England. Filed Apr. 5, 1887. Serial No. 233,775. (No model.) Patented in England June 5, 1886, No. 7,553.



Claim.—1. The combination of the card-grinding roller, its axle, and the ring *b*, adapted to the end of the roller, and having recesses *f* and slit *i*, with the clamp at the slit, and the flanged boss *c*, fixed to the axle and secured to the said ring, all substantially as set forth.

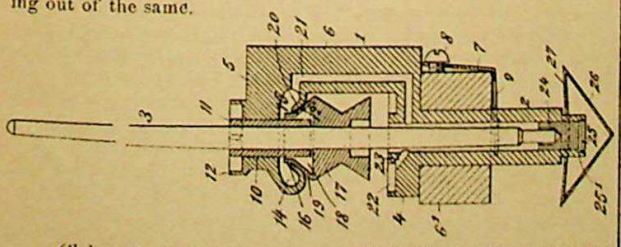
2. The combination of the card-grinding roller, its axle, and the ring *b*, adapted to the end of the roller, and having recesses *f* for weights, with the flanged boss *c*, secured to the axle and to the said ring and closing the said recesses in the latter, all substantially as specified.

3. The combination of the card-grinding roller, its axle, and the ring *b*, adapted to the end of the roller, and having a slit *i*, with the clamp at the slit, and the flanged boss fixed on the axle and secured to the ring, substantially as set forth.

4. The combination of the card-grinding roller, having at one flanged end thereof a slit *i*, with a spirally-wound fillet, the end of which passes through the slit, and a clamping-plate *k*, to bind the end of the fillet to the flange of the grinding-roller, and a screw *l* to secure the plate, substantially as specified.

404,609. SUPPORT FOR SPINNING-SPINDLES. JOSEPH DUFFY, Passaic, N. J. Filed Jan. 24, 1889. Serial No. 297,406. (No model.)

Brief.—The object of the invention is to provide for the proper distribution of the lubricant to the bearings and to prevent the throwing out of the same.



Claim.—1. A spindle-support provided with a socket in its lower portion, an apertured oil-chamber in its upper portion, and an oil-passage leading from the chamber to the socket, in combination with a spindle fitting in the socket, and a whirl on the spindle and having its upper end projecting into the said chamber, substantially as herein shown described.

2. The combination, with a spindle-support provided with a socket in its lower portion, an oil-chamber in its upper portion, with an opening in its bottom, and an oil-passage leading from the chamber to the socket, of a spindle seated in the socket, a chambered whirl on the spindle and having its upper end projecting into the oil-chamber, and a tubular bearing held in the support and projecting through the said oil-chamber into the chamber of the whirl, substantially as described.

3. The spindle-support 1, formed with the upper horizontal arm 5, the lower horizontal arm 4, the vertical portion 6, connecting arms 4 and 5, the depending tubular socket portion 2 to project through the rail, the annular oil-chamber 12 on the upper side of the arm 5, the annular oil-chamber 14 on the under side of arm 5, with opening 15 in its bottom surrounded by the upwardly-inclined annular portion 20, the opening 10, for the passage of the spindle connecting the oil-chambers 12 and 14, and the oil-passage 21, leading from the side of oil-chamber 14 down through the support to tubular socket portion 2, substantially as shown and described.

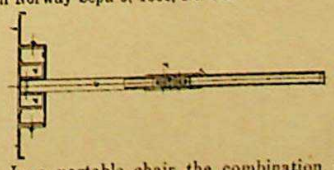
4. The spindle-support 1, formed with the upper horizontal arm 5, the lower horizontal arm 4, the vertical portion 6, connecting the arms 4 and 5, the depending tubular socket portion 2 to project through the rail, the annular oil-chamber 12 on the upper side of arm 5, the annular oil-chamber 14 on the under side of arm 5, with opening 15 in its bottom surrounded by the upwardly-inclined annular portion 20, the spindle-passage 10, connecting chambers 12 and 14, and the oil-passage 21, leading from the side of oil-chamber 14 down through the support to tubular socket portion 2, in combination with the spindle 3, having its lower end mounted in the tubular socket portion 2, the whirl 17, with the oil-chamber 18 in its upper portion having inclined sides 19 bearing against the upwardly-inclined portion 20 of chamber 14, and the neck 16, projecting through opening 15 in the latter, and the tubular spindle-bearing 11, extending through passage 10, with its upper end having oil-passages 13 opening into chamber 12 and its lower end projecting into chamber 18, substantially as shown and described.

5. The combination, with the rail 6', of the spindle and support, the latter having a tubular socket portion 2 projecting through the rail, and a lock consisting of the L-shaped metallic spring-strip 7, with an inclined arm secured by a detachable fastening to rail 6', and having the fork-shaped end 9 engaging the tubular socket portion 2, substantially as shown and described.

6. The combination, with the spindle and support, the latter having a tubular socket portion 2 projecting through the rail, with projections 29 on its lower end, of a trough 26, with a cross-strap 27, having an oblong aperture 28, with which the tubular socket portion 2 engages, substantially as shown and described.

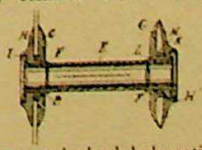
7. A spindle-support having the tubular socket portion 2, to project through the rail and receive the lower end of the spindle, and a socketed spindle-bearing plug 24, inserted in the end of tubular socket 2 and secured by a solder filling 25, substantially as shown and described.

404,610. PORTABLE CHAIR. LARS ENGEBRETSEN, Kampen, Christiania, Norway. Filed Dec. 19, 1888. Serial No. 294,049. (No model.) Patented in Norway Sept. 5, 1888, No. 913.



Claim.—In a portable chair, the combination, with the legs adapted to fold into compartments under the chair-body, of the boards *b*, hinged to the sides of the chair-seat and adapted to fold under and partially close the said compartments, substantially as described.

404,611. METALLIC WHEEL. FRANK H. ENSIGN, Toledo, Ohio. Filed Dec. 7, 1888. Serial No. 292,897. (No model.)

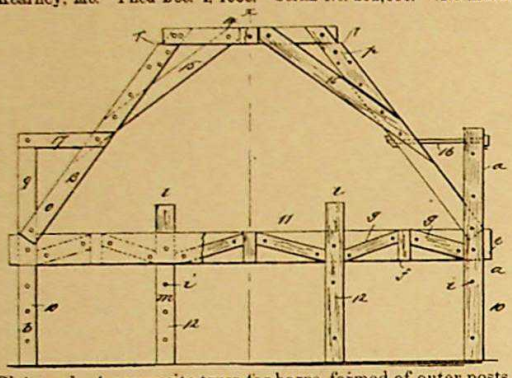


Claim.—1. In a metal wheel, hub-sections formed with oppositely-arranged circular projections and oppositely-arranged metal flanges adapted to meet when the sections are assembled to cause the annular faces to impinge spokes placed between the same, as and for the purpose set forth.

2. In a metal wheel, hub-sections formed with circular projec-

tions adapted to telescope within the hub, one projection being formed with a feather and the coacting projection with a groove, as and for the purpose set forth.

404,612. COMPOSITE TRUSS FOR BARNS. JAMES W. EVANS, Kearney, Mo. Filed Dec. 4, 1888. Serial No. 292,600. (No model.)

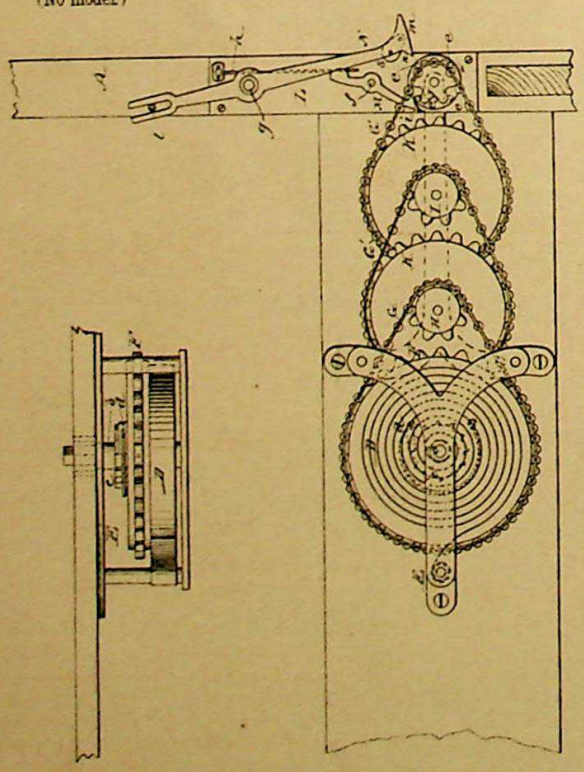


Claim.—1. A composite truss for barns, formed of outer posts 10, consisting of central planks *a*, shorter outer pieces *b*, secured thereto, chord 11, consisting of inner and outer planks embracing at their ends the plank *a* and resting thereat on the upper ends of pieces *b b*, the spacing-blocks between the chord-planks, the planking sub-rafters 13, secured at their lower ends to posts 10, straining-pieces 14, connecting the upper ends of the sub-rafters, and the braces connecting the upper ends of the central planks *a* with the sub-rafters, substantially as set forth.

2. A composite truss for barns, formed of the outer posts 10, consisting of central planks *a*, shorter outer pieces *b*, secured thereto, the chord 11, consisting in inner and outer planks embracing planks *a* between their ends and resting thereat on upper ends of pieces *b*, the shorter similarly-formed posts 12, the inner planks of which pass up between the chord-sections, the sub-rafters 13, secured at their lower ends to planks *a* at ends of chords 11, and the straining-piece 14, secured to upper ends of said rafters, substantially as set forth.

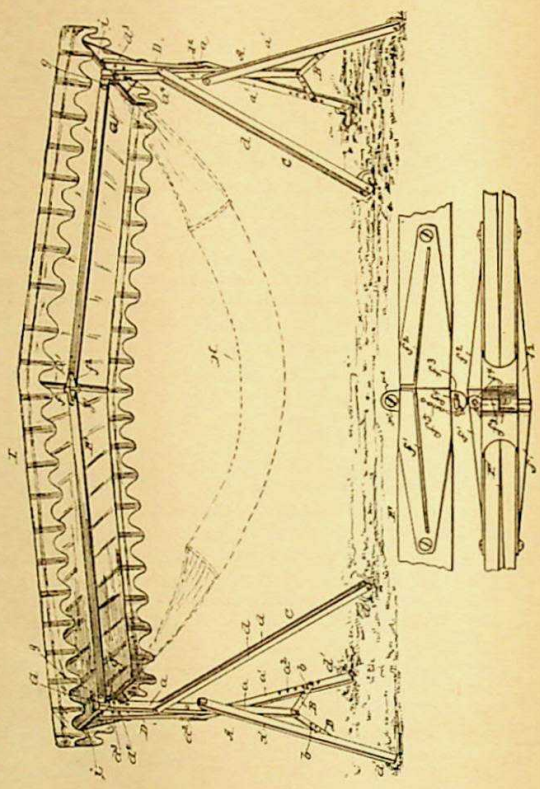
3. A truss for barns, consisting in the outer composite posts 10, having central planks *a* and shorter planks *b*, the chord 11, embracing the plank *a* at the upper ends of the planks *b*, the sub-rafters 13, secured to planks *a* and connected at their upper ends by straining-pieces 14, the braces connecting the upper ends of planks *a* with the said rafters, and the braces 15, connecting the said rafters with the straining-piece, substantially as set forth.

404,613. MOTOR FOR OPERATING SWINGING DEVICES. CHARLES J. B. GAUME, Brooklyn, N. Y. Filed Mar. 15, 1889. Serial No. 303,478. (No model.)



Claim.—In clock-work-escapement mechanism for actuating swinging cradles and other swinging structures, the combination, with the escapement-wheel J, provided with a series of pins *e*, of the stop-pawl M, controlled by a spring and having a concave shoe *i*, adapted to successively engage with said pins, and the releasing-lever N, adapted to operate the swinging structure, and having a shoe *m* for operation by the escapement-wheel, and a soft cushion or pad *s*, operating to release the stop-pawl from the escapement-wheel, essentially as shown and described.

404,614. COMBINED HAMMOCK AND CANOPY SUPPORT. JOHN GIFFORD, Watertown, N. Y. Filed Oct. 13, 1888. Serial No. 287,982. (No model.)



Claim.—1. As an improvement in hammock-supports, the supporting-frames having the vertical bars or uprights, the adjustable brace-legs secured thereto and provided with pivoted hooks at their outer lower ends, the double brace-legs pivotally secured to said vertical bars or uprights and having pivoted hooks at their outer ends, and the arms connecting the lower ends of said bars or uprights with said brace-legs, substantially as described.

2. As an improvement in combined hammock and canopy supports, the supporting-frames herein described, having vertical bars or uprights, and the arms pivotally secured at their lower ends to said bars or uprights, and the canopy attached to the upper projecting ends of said arms, which have a limited movement on either side of their pivots, substantially as set forth.

3. As an improvement in combined hammock and canopy supports, the supporting-frames having vertical bars or uprights, the arms pivotally secured to said bars or uprights, the cords or chains secured to said bars or uprights, and arms for limiting the movement of the latter and the canopy, substantially as described.

4. As an improvement in combined hammock and canopy supports, the supporting-frames herein described, having vertical bars or uprights, and the arms pivotally secured at their lower ends to said bars or uprights, and the canopy pivotally connected to the upper ends of said arms so as to be capable of being tilted and adjusted at the desired angle, said arms having a limited movement on either side of their pivots, substantially as set forth.

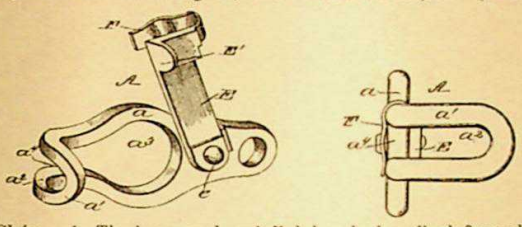
5. The supporting-frames having the vertical bars or uprights, the pivoted arms secured thereto, and the spring-tongues secured to said arms, in combination with the canopy attached to the upper ends of said arms, and having depending cords designed to be secured by said tongues by being passed thereunder for holding the canopy at the desired angle, substantially as described.

6. The supporting-frames having the pivotally-secured arms provided with upper recessed ends, and the spring-tongues secured to said pivoted arms, in combination with the canopy having the projecting studs resting in said recessed ends, and the depending cords designed to be secured by said tongues by being passed thereunder for holding the canopy at the desired angle, substantially as described.

7. In a hammock-support, the longitudinal connecting-bar composed of sections, the hinge connected to the inner meeting ends of

said sections and having abutting ribs or flanges on their sides, the lower overlapping apertured ears projecting therefrom, and the pin designed to be inserted through said ears, substantially as set forth.

404,615. GRAB-LINK FOR TRACE-CHAINS. JOSEPH E. GIROUX, Alpena, Mich. Filed Aug. 13, 1888. Serial No. 282,508. (No model.)



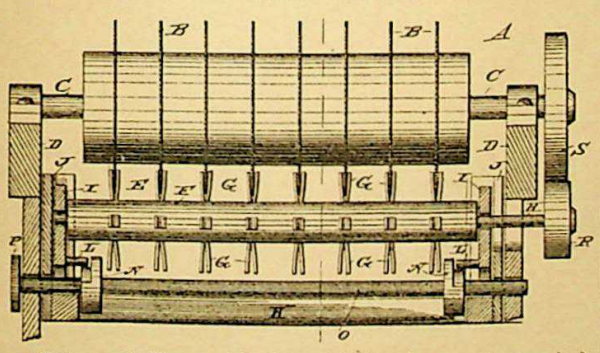
Claim.—1. The improved grab-link herein described, formed with a body part or portion and a gripping portion a', having a narrow opening a^2, into which the chain may be slipped sidewise, and a fastening for holding the chain in said opening a^2, the latter being adapted to prevent any longitudinal movement of the chain when adjusted, substantially as set forth.

2. The improved grab-link herein described, having a body portion a and gripping portion a', provided, respectively, with openings a^3 a^2, communicating, as described, and a fastening consisting of a bar pivoted at one end and movable at its other end into position to secure the chain in the opening a^2 of portion a', substantially as set forth.

3. The improved grab-link herein described, formed with a body part or portion and with a gripping portion a', and provided with a fastening consisting of a bar pivoted at one end and movable at its other or free end into position to secure the chain in the gripping portion a', and the clamp whereby to hold said free end adjacent to the gripping portion a', substantially as set forth.

4. The grab-link herein described, having a body portion and gripping portion provided, respectively, with openings a^3 a^2, and provided with a fastening pivoted at one end and provided at its opposite end with a clamp consisting of a spring secured at one end to the fastening and arranged to bear against the opposite side of the link from said fastening, substantially as set forth.

404,616. CLEANER FOR COTTON-GIN SAWS. JOHN C. GODWIN, Lloyd, Tex., assignor to himself and W. C. Godwin, same place. Filed Sept. 27, 1888. Serial No. 286,578. (No model.)

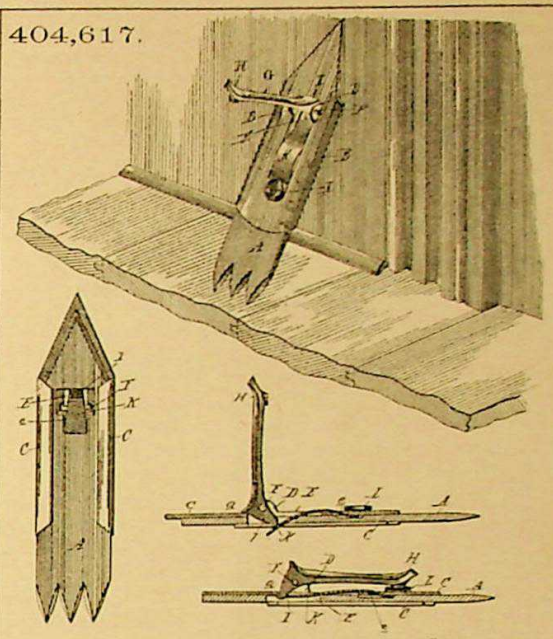


Claim.—1. The combination, with the gin-saws, the saw-shaft, and a friction-pulley on said shaft, of a drum mounted to rotate and to slide vertically, arms held radially on the said drum and adapted to engage the faces of the saws, a pulley held on the said drum, and means, substantially as described, for moving the drum up and down so that the arms engage or are disengaged from the saws as the said pulley is moved into frictional contact with the saw-shaft pulley, so as to impart a rotary motion to the drum, as set forth.

2. In a cleaner for cotton-gin saws, the combination, with a frame provided with standards, of plates held to slide in the said standards, a shaft journaled in the said plates, a drum on the said shaft, pairs of arms secured on the said drum, pins projecting from the said plates, cams operating on the said pins, and a shaft mounted to rotate in the said frame and carrying the said cams, substantially as shown and described.

3. In a cleaner for cotton-gin saws, the combination, with a frame provided with standards, of plates held to slide in the said standards, a, shaft journaled in the said plates, a drum held on the said shaft, pairs of arms secured on the said drum, pins projecting from the said plates, cams operating on the said pins, a shaft mounted to rotate in the said frame and carrying the said cams, and a hand-wheel for turning the said shaft, substantially as shown and described.

404,617. COMBINED DOOR-FASTENER AND ALARM. SAMUEL GOULDEN, Newark, N. J. Filed Feb. 23, 1889. Serial No. 300,938. (No model.)

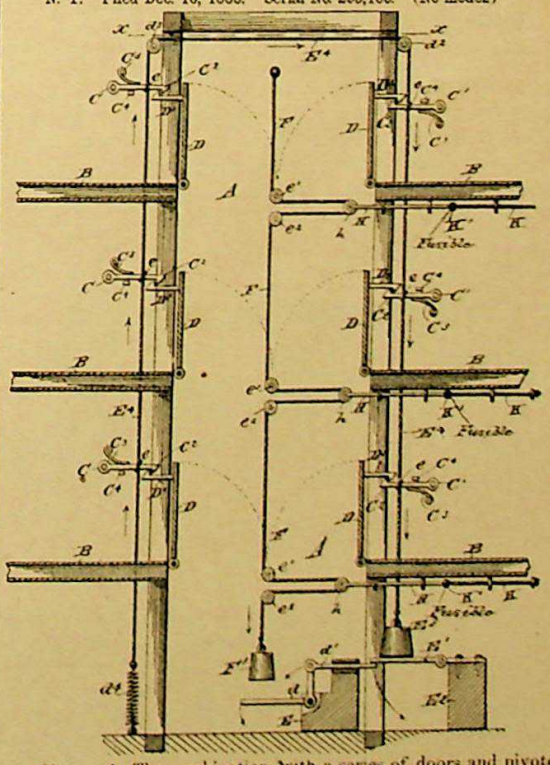


Claim.—1. The combination, with the plate or resisting-bar A and slide B, moving parallel therewith, of a hammer carried by one of said instruments and tripped by the other, and a spring for operating the hammer, substantially as described.

2. The combination of the plate A, slide B, embracing said plate and moving parallel therewith, the hammer mounted on said slide, and a spring attached to said slide for operating the hammer, substantially as described.

3. The combination, with the perforated plate A, the slide B, having its edges turned over the sides of the plate A, and ears formed on the face of said slide, of a hammer mounted in said ears, a spring acting on the hammer and attached to the slide, and a cup to receive a cap, substantially as described.

404,618. SELF-CLOSING HATCHWAY. FRANK J. GRIDLEY, New York, assignor to the Underwriters Hatch Door Company, Brooklyn, N. Y. Filed Dec. 10, 1888. Serial No. 293,100. (No model.)



Claim.—1. The combination, with a series of doors and pivoted latches capable of engaging with said doors, of a drop or trap door, a lever engaging with said door, a weighted trip-rope suspended over said lever, a rope connected to the latches and having a weight supported on the drop or trap door, a retaining-rope, and a fusible connection between said retaining and trip ropes, substantially as shown and described.

2. The combination, with a series of doors, latches to engage said

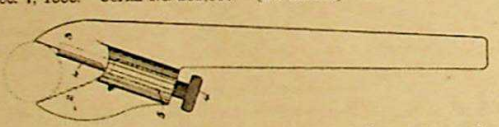
doors and hold them open facing, respectively, in opposite directions, a spring-actuated weighted rope connected with said latches, and a drop or trap door supporting said weight, of a lever engaging with the trap-door, a weighted trip-rope suspended over said lever, a retaining-rope, and a fusible connection between said trip and retaining ropes, substantially as shown and described.

3. The combination, with a series of doors provided with fixed latch-pins, pivoted latches engaging with the fixed latch-bars, a spring-actuated weighted rope connected with said latches, and a drop or trap door supporting the weight of said rope, of a weighted trip-rope, a lever pivoted beneath said trip-rope, a sliding trip-arm attached to the lever and engaging the trap-door, a release-bar connected with the trip-rope, a retaining-rope, and a fusible connection between said releasing-bar and retaining-rope, substantially as shown and described.

4. The combination, with a series of doors provided with fixed latch-pins, pivoted latches to engage said doors, a spring-actuated rope attached to said latches carrying a weight, and a trap or drop door supporting said weight, of pulleys arranged in pairs, a weighted trip-rope passing over said pulleys and provided with horizontal open loops, a release-bar having a pulley attached engaging with the said loops, a retaining-rope united to said release-bar by a fusible connection, an angled lever below the trip-rope, and a sliding trip-arm attached to said lever and supporting the trap-door, substantially as shown and described.

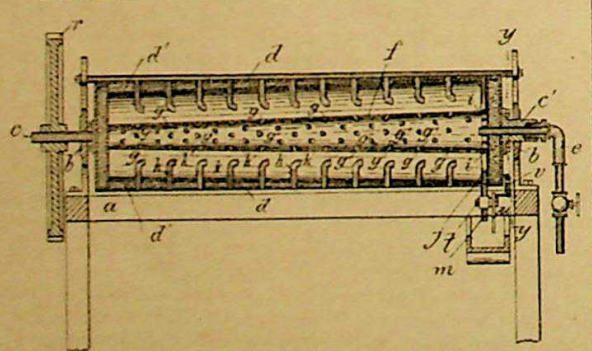
5. The combination, with the hinged doors and latches engaging with said doors, having a weighted operating-rope, of a retaining-rope, a trip-rope, a release-bar connected therewith, and a fusible link uniting the retaining-rope and release-bar, all arranged to operate substantially as shown and described.

404,619. PIPE-WRENCH. JOHN T. HAWKINS, Taunton, Mass. Filed Dec. 7, 1888. Serial No. 292,886. (No model.)



Claim.—In combination with a pipe-wrench constructed of a serrated or toothed jaw, as 2, and an opposite smooth or unserrated jaw, as 3, forming an acute angle with each other, an adjustable stop or tooth, as 4, supported upon or within a recess formed in the smooth jaw and adjustable practically in line with said smooth jaw, whereby said stop or tooth may be adjusted for any given diameter of pipe or rod within the range of said wrench's embrace, so as to allow the entrance of the pipe or rod into the angle formed by the jaws, by sliding upon said smooth jaw until the serrated jaw has taken firm hold upon said pipe or rod, and then preventing any further entrance of and resulting tendency to crush said pipe, to assist as a nearly oppositely applied stop or tooth in rotating said pipe, substantially as set forth.

404,620. MACHINE FOR SPONGING CLOTH. WILLIAM HEBDON Boston, Mass. Filed Feb. 23, 1889. Serial No. 300,875. (No model.)

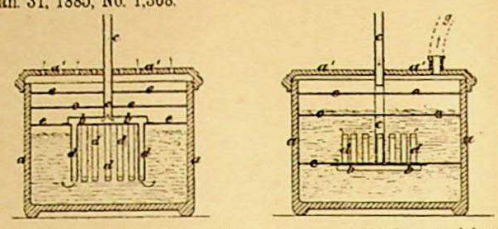


Claim.—1. In a cloth-finishing apparatus, a horizontal rotary perforated cylinder fitted to receive steam and provided with a tapered lining, whereby the lower internal surface of the cylinder is given a continuous incline from one end to the other, said cylinder being also provided with inwardly-projecting tubes having bent or hooded inner ends and with an outlet for the escape of water, as set forth.

2. In a cloth-finishing apparatus, the combination of a horizontal rotary perforated cylinder having inwardly-projecting pipes with bent or hooded ends, a perforated cone or cone-frustum having guard-tubes *d*, and a steam-supply pipe entering said cone, as set forth.

3. In a cloth-finishing apparatus, the combination of a horizontal rotary perforated cylinder having an outlet or waste pipe, an automatically-closed valve therefor, and means for opening said valve at a given point in the rotation of the cylinder.

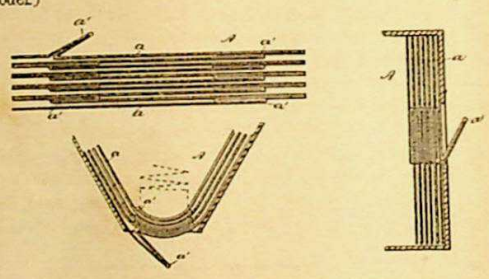
404,621. APPARATUS FOR PURIFYING ATMOSPHERIC AIR. WILLIAM HIBBERT, Manchester, County of Lancaster, England. Filed Oct. 30, 1888. Serial No. 289,511. (No model.) Patented in England Jan. 31, 1885, No. 1,368.



Claim.—1. An apparatus for washing, purifying, and imparting medicinal properties to air, consisting of a vessel partly filled with an antiseptic mixture, an inner compartment, a series of finely-perforated tubes extending from the said compartment into the mixture, and a supply-pipe through which compressed air may be forced into the compartment and tubes, substantially as set forth.

2. A portable apparatus for cleansing and purifying air, consisting of a vessel containing an antiseptic mixture and a compartment having finely-perforated tubes, said compartment provided with an attachment consisting of a rubber pipe having a bulb and inlet-valve, whereby air is forced into the compartment, an outlet from the vessel, and a pipe connecting the outlet to a mouth-piece provided with a double-acting valve, substantially as set forth.

404,622. PACKAGE OF TOILET-PAPER. OLIVER H. HICKS, Chicago, Ill. Original application filed Mar. 27, 1886, Serial No. 196,799. Divided and this application filed May 26, 1888. Serial No. 275,226. (No model.)



Claim.—1. The combination, with a package such as described, composed of a series of sheets, each containing a fold or overlapping portion, of a support for said bundle, provided with a slot or opening to which the fold or overlapping portion of each sheet is successively presented, substantially as described.

2. A bundle or package such as described, composed of a series of separable sheets superposed the one upon the other, each of said sheets being provided with a free edge projecting above the face of the sheet and formed by folding the sheet twice in its length and bending the overlapping portion down upon the face of the sheet, as and for the purpose set forth.

3. A bundle or package composed of separable sheets superimposed one upon another, each sheet folded twice, and the overlapping edge or fold bent down upon the face of the sheet, the bundle or package so formed being bent in line with the folds, substantially as described.

4. In combination with a box or case having a slot and supports or inclined walls on opposite sides of the opening, a bundle or package composed of separable sheets, each sheet containing a free fold or edge, the said bundle being bent in the line of the folds and resting within the case with the folds of the sheets in line with the slot, substantially as described.

404,623. SAW-SWAGING MACHINE. THOMAS B. HITE, Seattle, Wash. Filed Dec. 18, 1888. Serial No. 294,009. (No model.)

Claim.—1. In a saw-swaging machine, the combination, with a die-plate having recesses and a head secured on the front of the said die-plate, of a die having a beveled end and held adjustably in one of the said recesses, a cam located at the beveled end of the said die, a shaft mounted to turn in the said die-plate and head and carrying the said cam, an arm secured on the said shaft and provided on its outer end with a pin, and a slotted lever fulcrumed on the said head and connected with the pin of the said arm, substantially as shown and described.

2. In a saw-swaging machine, the combination, with a die-plate and a head secured on the same, of a die held adjustably in the said head and provided with a beveled end, a cam located in front of the said die, a shaft carrying the said cam and mounted to turn in the said die-plate and head, an arm projecting from the said shaft, a pin held on the said arm, a lever fulcrumed on the said head and provided with a slot into which projects the pin on the said arm, a pin held in

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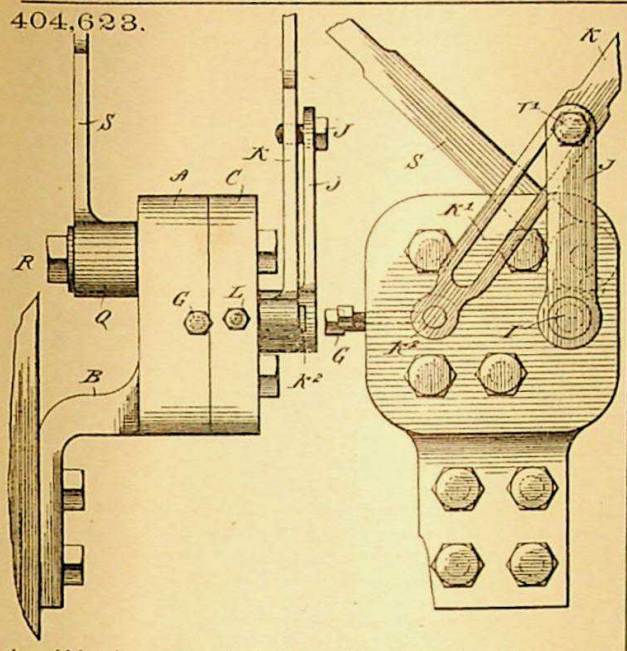
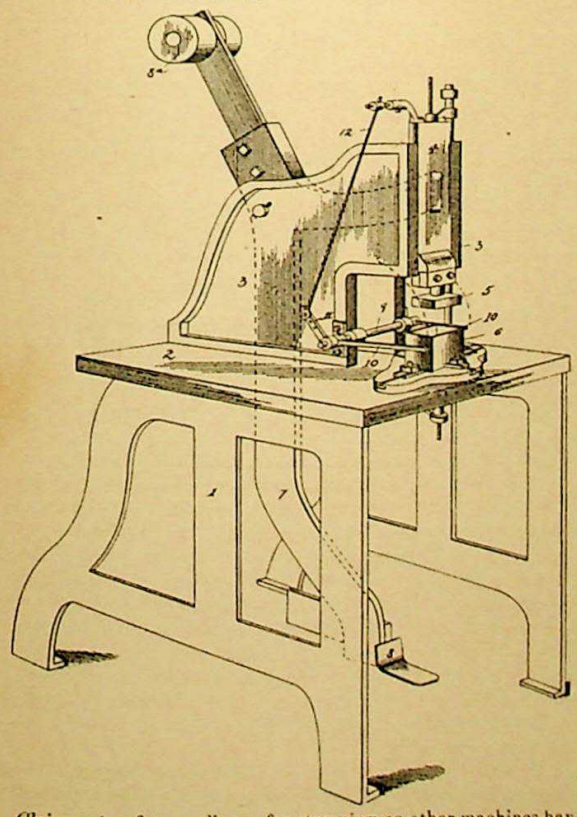


the said head, a second pin held directly opposite the said first-named pin in the said die-plate, and a second cam for operating the said second-named pin, substantially as shown and described.

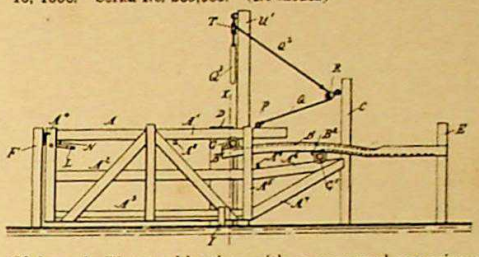
3. In a saw-swaging machine, the combination, with a die-plate and a head secured on the same, of a die held adjustably in the said head and provided with a beveled end, a cam located in front of the said die, a shaft carrying the said cam and mounted to turn in the said die-plate and head, an arm projecting from the said shaft, a pin held on the said arm, a lever fulcrumed on the said head and provided with a slot into which projects the pin on the arm, a pin held in the said head, a second pin held directly opposite said first-named pin in the said die-plate, a second cam for operating said second-named pin, and a lever for operating said second cam, substantially as shown and described.

404,624. SAFETY APPLIANCE FOR STAMPING OR OTHER MACHINES. THOMAS J. HOLMES, Chicago, Ill. Filed Aug. 9, 1888. Serial No. 282,306. (No model.)



Claim.—A safety appliance for stamping or other machines having a reciprocating plunger, comprising, in combination with said plunger, a rock-shaft provided with fenders, a rock-arm rigidly secured to the rock-shaft, and a link pivotally connecting the rock-shaft arm with the plunger, whereby, when the plunger descends, the fenders are operated to force the hands of an attendant out of the path of the plunger, substantially as described.

404,625. GATE. WILLIAM C. HOOKER, Abingdon, Ill. Filed Sept. 18, 1888. Serial No. 285,683. (No model.)



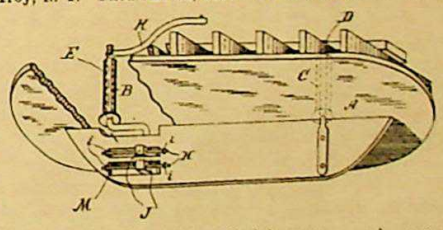
Claim.—1. The combination, with a rearward extension of the gate A, of the curved beam B, provided with grooves in its upper and lower edges, and the rollers G and G', adapted to travel in said grooves and supporting said gate, substantially as shown and described.

2. The combination, with the rearward extension of the gate A, of the curved beam B, provided with grooves in its upper and lower edges, the rollers G and G', adapted to travel in said grooves and support said gate, and means, substantially as described, for imparting an endwise motion to said gate, as set forth.

3. The combination, with the gate A, of the curved beam B, provided with grooves on its upper and lower edges, the rollers G and G', supporting said gate and adapted to travel in said grooves, and means, substantially as shown and described, for automatically locking said gate when in a closed position, as set forth.

4. In a gate, the combination, with the longitudinal bar A' and the extension A^6, of the curved fixed beam B and the rollers G and G', held, respectively, between said bar A' and the top of the beam B and the extension A^6 and the bottom of the beam B, substantially as shown and described.

404,626. STEERING CENTER-BOARD. JOSEPH H. HUNT, West Troy, N. Y. Filed Jan. 30, 1889. Serial No. 298,130. (No model.)



Claim.—1. The herein-described improvement in center-boards, consisting of a pivotal board provided with a permanent pivotal bearing at its forward portion, in combination with a pivotal shifting lever or crank at its rear portion, substantially as and for the purposes set forth.

2. The herein-described improvement in center-boards, which consists of a center-board pivoted near its forward end, in combination with a shifting lever or crank and a pivotal support for the center-board, said crank being provided with friction-bearings and connected to the rear portion of the center-board, substantially as and for the purposes described.

3. The herein-described improvement in center-boards, consisting of a board pivoted near its forward end, provided with metallic friction-bars secured to said board at their ends, in combination with a pivotal shifting lever and crank provided with friction-bearings and connected to said center-board back of the permanent pivotal-point support, substantially as and for the purposes set forth.

4. The herein-described improvement in center-boards, consisting of a board pivoted near its forward end and provided with metallic friction-bars secured to said board at their ends, said board partly cut away at its top to make room for the movement of the shifting-lever, in combination with a pivotal shifting lever and crank provided with friction-blocks and secured to said bars and located back of the permanent pivotal point of the board, substantially as described.

5. The herein-described improvement in center-boards, consisting of a board pivoted near its forward end and provided with metallic friction-bars secured to said board at their ends and partly cut away at its top to make room for the movement of the shifting-lever, in combination with pivotal shifting lever and crank secured to the rear portion of the center-board and metallic bearing-blocks pivoted thereto, said blocks being provided with perforations embracing said friction-bars and shifting-lever, substantially as described.

404,627. DOOR-CHECK. ABRAM HURSH, Yellow Springs, Ohio. Filed June 21, 1888. Serial No. 277,780. (Model.)

Claim.—1. In a door-check having a suitable frame or casing, a

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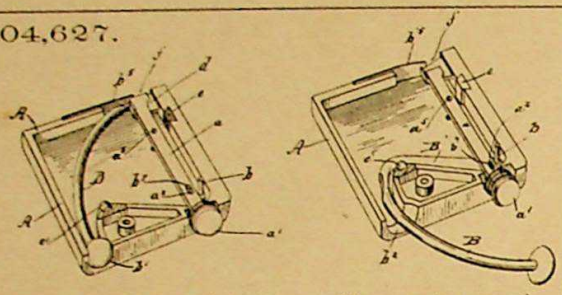


spring-actuated arm, a catch to engage said arm, and an operating-plunger adapted to release said catch, substantially as specified.

2. A door-check having a suitable frame or casing, a spring-actuated arm, a catch to engage said arm, a plunger to release said catch, and means, substantially as described, for connecting said arm and plunger, so that a longitudinal movement of said plunger will cause said arm to be engaged with said catch, substantially as specified.

3. An operating-plunger, a curved pivoted arm, a catch to engage said arm, adapted to be operated by said plunger, a projecting stud in said arm engaging in a slotted opening in said plunger, and a spring connected to said arm and adapted to move the same when released by said catch.

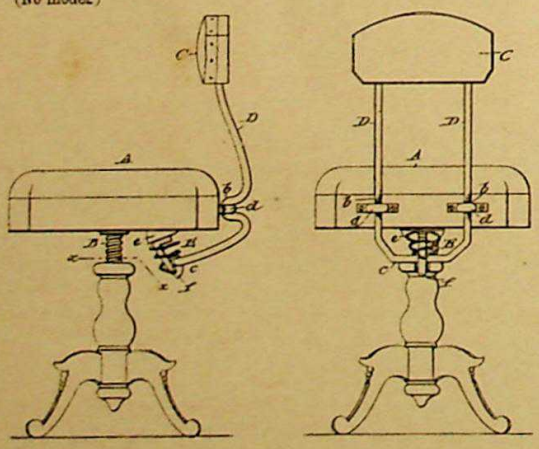
4. The outer casing, the operating-plunger therein, a curved arm pivoted to said casing, a catch operated by said plunger, adapted to engage said arm, and elastic cushions in said casing to limit the movement of said arm, substantially as specified.

5. The outer casing, the door-holding arm pivoted therein, the spring-catch for retaining said arm, a plunger for releasing said spring-catch, the operating-spring for said arm, and means, substantially as described, for connecting said plunger and arm, whereby the arm may be returned to its normal position by pressing on said plunger, substantially as specified.

6. The outer casing, the operating-plunger having a cushioned end extending into said casing, a swinging door-holding arm operated by said plunger, and a pin, substantially as described, for connecting the operating parts to the casing and thus holding said arm from movement when the cushioned end of said plunger is used as a simple door-stop.

7. The outer casing, the pivoted arm therein, the spring-catch adapted to engage said arm, the plunger adapted to operate said spring-catch, the operating-spring connected to said arm, the projecting stud on said arm engaging with the slotted opening in said plunger, and the spring adapted to hold said plunger in its normal position, substantially as and for the purpose set forth.

404,628. SPRING-BACK FOR STOOLS OR CHAIRS. WILLIAM P. JAMES, Lincolnton, N. C. Filed Oct. 13, 1888. Serial No. 287,995. (No model.)

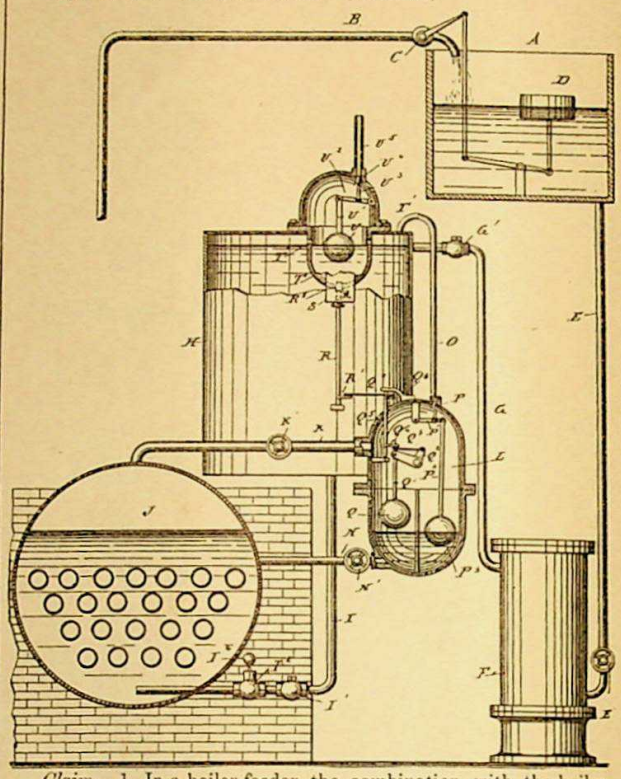


Claim.—1. In spring-backs for music and other stools or chairs, the back composed of the upper piece C and the frame D, constructed of a bar bent to form downwardly-projecting limbs, crooks *b b*, and a forwardly-projecting lower loop *c*, in combination with the loops *d d*, for connecting the back to the seat.

2. The combination, with the seat of the stool or chair, of the upper back support or piece C, the rod or bar, frame D, having crooks *b b*, and a forwardly-projecting lower loop *c*, the loops *d d*, secured to the back of the seat and receiving within them the crooks *b b*, and a spring beneath the seat operating to control the crooked or hinged and looped frame D, essentially as described.

3. The combination, with the stool or chair seat, of the plate *e*, with its attached hook *f*, secured to the under side of the seat, the spiral spring *E*, and the rocking or hinged back composed of the upper piece C, the frame D, bent to form crooks *b b*, and forwardly-projecting loop *c*, arranged for movement within the hook, and the loops *d d*, receiving the crooks *b b* within them, substantially as shown and described.

404,629. BOILER-FEEDER. ALBERT F. JONES, Salem, Mass. Filed Sept. 22, 1888. Serial No. 286,111. (No model.)



Claim.—1. In a boiler-feeder, the combination, with the boiler, of a closed reservoir connected by a pipe having a check-valve with the said boiler, a closed vessel in communication at the top and bottom with the said boiler, a pipe leading from the top of the said closed vessel into the top of the said reservoir, a valve held on the said pipe, and a float located in the said vessel and connected with the said valve to open and close the said pipe, substantially as shown and described.

2. In a boiler-feeder, the combination, with a closed reservoir connected with a water supply and with the boiler, of a pipe leading from the top of the said reservoir, a closed vessel in communication with the steam and water compartment of the boiler and connected at its upper end with the said pipe, a valve adapted to close the said pipe, and a float held in the said closed vessel and operating the said valve, substantially as shown and described.

3. In a boiler-feeder, the combination, with a closed reservoir in communication with the boiler and provided with a supply-pipe having a check-valve, of a steam-pipe leading from the upper end of the said reservoir, a closed vessel connected at its top with the said steam-pipe and held in communication with the steam and water compartment of the boiler, a valve for opening and closing the said pipe, and a float held in the said closed vessel to open and close the said valve and the said check-valve, substantially as shown and described.

4. In a boiler-feeder, the combination, with a reservoir connected with the boiler, of a supply-pipe having a check-valve and discharging into the top of the said reservoir, a receptacle held in or near the top of the said reservoir and in communication with the latter, a float held in the said receptacle, and a valve operated by the said float and adapted to close or connect the outside with the interior of the said receptacle, substantially as shown and described.

5. In a boiler-feeder, the combination, with a reservoir connected with the boiler, of a supply-pipe having a check-valve and discharging into the top of the said reservoir, a receptacle held in or near the top of the said reservoir and in communication with the latter, a float held in the said receptacle, a valve operated by the said float and adapted to close or connect the outside with the interior of the said receptacle, and a steam-pipe leading from the top of the said reservoir and connecting with the live steam in the boiler, substantially as shown and described.

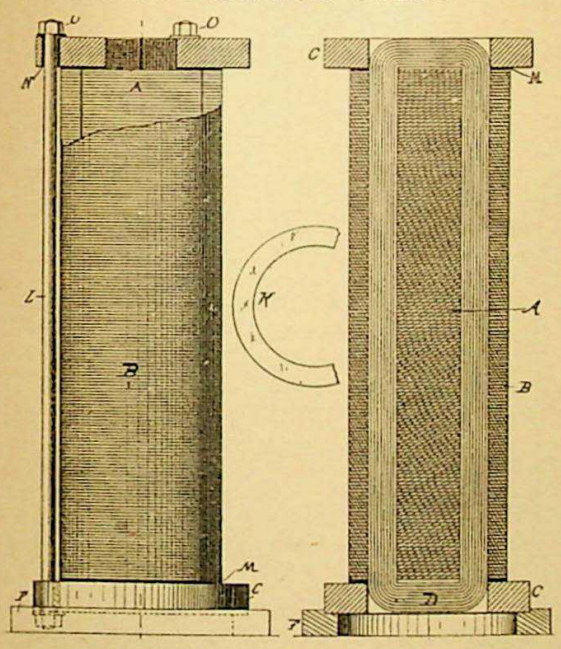
6. In a boiler-feeder, the combination, with a reservoir connected with the boiler, of a supply-pipe having a check-valve and connected with the said reservoir, a receptacle held in or near the top of the said reservoir and in communication with the latter near its top, a float held in the said receptacle, a valve held in the said receptacle and opening to the outside, the said valve being operated by the said

float, a steam-pipe leading from the said reservoir, a closed vessel connected with the said pipe and in communication with the steam and water compartments of the boiler, a valve for closing and opening the said steam-pipe, and a float held in the said closed vessel and operating the said valve, substantially as shown and described.

7. In a boiler-feeder, the combination, with a reservoir connected with the boiler, of a supply-pipe having a check-valve and connected with the said reservoir, a receptacle held in or near the top of the said reservoir and in communication with the latter near its top, a float held in the said receptacle, a valve held in the said receptacle and opening to the outside, the said valve being operated by the said float, a steam-pipe leading from the said reservoir, a closed vessel connected with the said pipe and in communication with the steam and water compartments of the boiler, a valve for closing and opening the said steam-pipe, a float held in the said closed vessel and operating the said valve, and a second float held in the said closed vessel and operating a plug-valve in the bottom of the said closed receptacle, substantially as shown and described.

8. In a boiler-feeder, the combination, with the boiler, of a closed reservoir located above the said boiler, a pipe connecting the bottom of the said reservoir with the bottom of the boiler, a check-valve held in the said pipe, a second valve held in the said pipe between the boiler and the said check-valve, and a weighted ball secured to the valve-stem of the said second valve, substantially as shown and described.

404,630. INDUCTION-COIL. JOHN F. KELLY, Hoboken, N. J., assignor to the United States Electric Lighting Company, same place. Filed Oct. 30, 1886. Serial No. 217,563. (No model.)



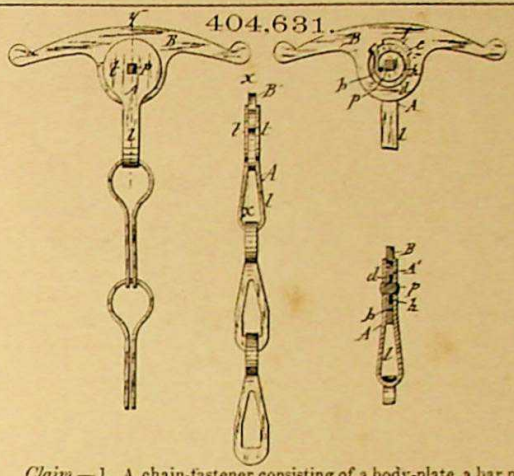
Claim.—1. The combination, with a sectional longitudinally-grooved core and primary and secondary coils wound thereon, of a sectional casing or armature surrounding and inclosing the core and coils, as set forth.

2. The combination, with a core formed of recessed iron plates with interposed sheets of insulating material and primary and secondary coils wound longitudinally around the core in the grooves formed by the recesses of the plates, of a casing composed of perforated plates or rings of iron with interposed insulating material built up around the coils and core, as set forth.

3. The combination, with a core composed of recessed iron plates with interposed sheets of insulating material and primary and secondary coils wound longitudinally around the core in the grooves formed by the recesses of the plates, of a casing composed of a series of iron rings with interposed insulating material, closely fitting the core, and means for binding the parts together, as and for the purpose set forth.

4. An induction coil or transformer of alternating electric currents, consisting of a sectional iron core provided with grooves or channels, primary and secondary conductors, and an outer sheathing, the primary and secondary conductors being wound in the same grooves or channels, and being equally close to both the core and the sheathing, as set forth.

404,631. CHAIN-FASTENER. HARRY E. KELLEY, Niagara Falls, assignor to the Oneida Community, (Limited,) Community, N. Y. Filed Nov. 28, 1888. Serial No. 292,094. (No model.)



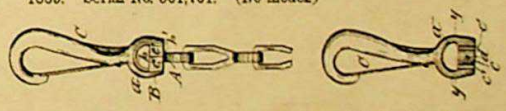
Claim.—1. A chain-fastener consisting of a body-plate, a bar pivoted to the body-plate, a stop arranged to arrest the movement of the aforesaid bar in one direction, and a coiled spring holding the bar normally resting on the stop, as set forth.

2. The improved chain-fastener consisting of a body-plate, a bar pivoted to the body-plate and provided with a chamber at its pivot, a stop in position to arrest the movement of the aforesaid bar in one direction, and a coil-spring seated in the aforesaid chamber and holding the bar normally resting on the stop, as set forth.

3. The combination of the body-plate A, formed with the case A′, the bar B, pivoted in said case, a stop arranged to arrest the swinging of the aforesaid bar in one direction, and a coil-spring inclosed in the aforesaid case and holding the bar normally resting on the stop, substantially as described and shown.

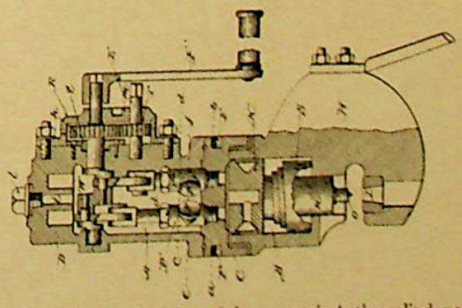
4. The combination of the body-plate A, formed with the case A′, the disk *d*, confined in the said case and provided with the projection *e*, the bar B, formed with the eye *b*, and pivoted thereby on the aforesaid disk, and provided with the elongated notch *f* for the reception of the projection *e*, and the coil-spring *h*, seated in the eye *b* and connected at opposite ends, respectively, to the bar B and disk *d*, substantially as described and shown.

404,632. SWIVEL. HARRY E. KELLEY, Niagara Falls, assignor to the Oneida Community, (Limited,) Community, N. Y. Filed Mar. 2, 1889. Serial No. 301,761. (No model.)



Claim.—In a swivel, the combination, with the headed member, of the sleeved member formed with the yoke *a*, semi-cylindrical sleeve portion *c* on the ends of said yoke and axially in line with the article to which it is attached, and clinching-prongs *c′ c′*, extending from the sleeve portion *c* and adapted to fold around the neck portion of the aforesaid headed member, substantially as described and shown.

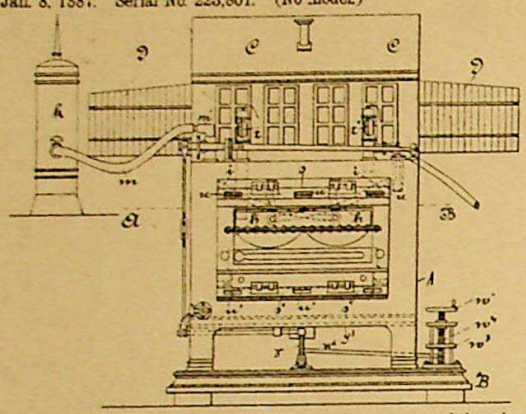
404,633. HYDRAULIC PUNCHING-MACHINE. CONSTANTIN C. KLINIK, FRIEDRICH PINKOWSKI, and AUGUST GROSS, Königshütte, Prussia, Germany. Filed Nov. 7, 1887. Serial No. 254,729. (No model.) Patented in Germany Feb. 12, 1887, No. 41,746.



Claim.—The combination of the reservoir A, the cylinder secured to the base thereof and having the pressure-piston, the pumps arranged within the reservoir and having their lower ends screwed to the base thereof, the cap D, secured to the upper end of the reservoir, said cap and reservoir having the bearings formed in their meeting ends, the plate *t*, secured to the cap and reservoir, the housing E, bolted to the cap and reservoir, the crank-shaft journaled in the bearings in the reservoir and cap and in openings in the plate *t* and housing E, the cranks of the said shaft being connected to the pump-plungers, the wheel *h* on the said shaft, the shaft *m*, journaled in bearings in the housing and in the reservoir, and having the pinion *r*, meshing

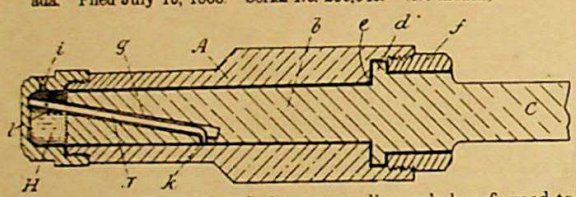
with wheel *h*, and the crank F', adapted to fit on the outer ends of either the crank-shaft or shaft *m*, substantially as described.

404,634. INCUBATOR. WILHELM KNOPFF, Berlin, Germany. Filed Jan. 8, 1887. Serial No. 223,801. (No model.)



Claim.—A series of nests and the box or drawer containing them, in combination with a hot-water receptacle or artificial mother arranged for contact with said eggs, and a screw-shaft, nut, and levers for raising and lowering said artificial mother at will, substantially as set forth.

404,635. CARRIAGE-AXLE. FLORIAN LEBEL, Levis, Quebec, Canada. Filed July 16, 1888. Serial No. 280,049. (No model.)



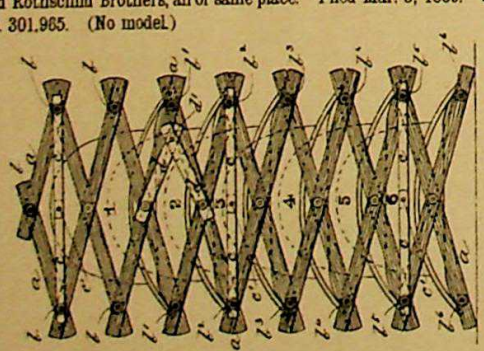
Claim.—1. The axle and the surrounding axle-box formed to leave a chamber between them, the said axle having the oil-passage extending from the chamber to its periphery, in combination with the agitating-rod located within said oil-passage and arranged to be moved therein by the revolution of the wheel.

2. A carriage-axle provided with a rod J, playing loosely in the opening *g*, and held against the end of the chamber in the cap H by the spiral spring *l*, substantially as shown and specified.

3. The combination of the axle C, with the cap H secured to the box A, having the interior of its end wall indented or otherwise uneven, and provided with a filling-hole closed by the screw-plug *i*, substantially as specified.

4. The combination of the chambered cap H, having an indented interior surface and an opening fitted with a screw-plug *i*, with the rod J lying loosely in the opening *g* in the axle and held against the uneven wall of the cap H by the spiral spring *l*, as shown and described.

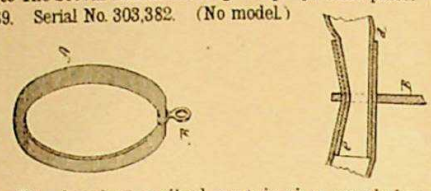
404,636. HOLDER AND PACKING-FRAME FOR HATS. WILLIAM M. LEVY, St. Louis, Mo., assignor of two-thirds to Adolph Bernd and Rothschild Brothers, all of same place. Filed Mar. 5, 1889. Serial No. 301,965. (No model.)



Claim.—1. In a holder and packing device for hats, the combination of sides or frames, each composed of bars jointed together on the lazy-tong principle, and bars or holders connecting the said frames, with means for locking the frames in the extended and closed positions, substantially as shown, and for the purpose described.

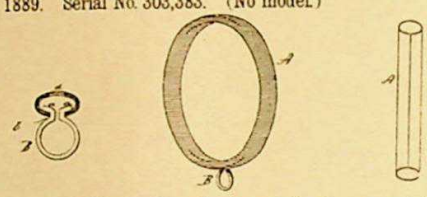
2. In a holder and packing device for hats, the combination of sides or frames, each composed of bars jointed together on the lazy-tong principle, bars or holders connecting the said frames, and means for locking the frames in the extended and closed positions, with means for securing the hats to the said connecting bars or holders, substantially as shown, and for the purpose described.

404,637. CURTAIN-RING. JOHN LINES, Waterbury, Conn., assignor to The Scovill Manufacturing Company, same place. Filed Mar. 15, 1889. Serial No. 303,382. (No model.)



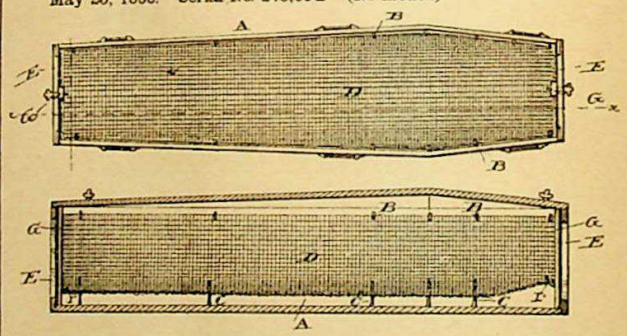
Claim.—The herein-described curtain-ring, consisting of a tube bent into ring shape, the ends of the tube introduced the one within the other, one end overlapping the other, combined with a metal eye B, constructed with a loop *b*, embracing the overlapping ends of the ring, and struck down upon the said overlapping ends to form indentations in the two, whereby the ring is secured in place and the ends united to complete the ring.

404,638. CURTAIN-RING. JOHN LINES, Waterbury, Conn., assignor to The Scovill Manufacturing Company, same place. Filed Mar. 15, 1889. Serial No. 303,383. (No model.)



Claim.—The herein-described curtain-ring, consisting of a tube bent into ring shape, one end of the tube inserted into the other end to complete the ring, the overlapping ends pierced from the outside, combined with an eye made from wire bent into ring shape with radially-projecting ends, the said projecting ends introduced through the said perforation in the overlapping ends of the tube and struck down upon the inside as a means for securing the eye to the ring, and also serving to secure the two ends of the ring together, substantially as described.

404,639. COFFIN. EDWIN C. MANNING, Washington, D. C. Filed May 25, 1888. Serial No. 275,094. (No model.)



Claim.—1. The combination, with a coffin constructed with open ends, of frames having wire fabrics attached thereto, said frames secured to the open ends of the said coffin, and removably-secured end pieces, substantially as set forth.

2. A coffin provided with a reticulated basket suspended within its walls, free therefrom, in combination with ventilating-passages covered with wire-gauze, substantially as described.

3. The combination of a coffin, a corpse-supporting reticulated basket suspended therein, opposite openings through its walls covered with wire-gauze, and removable air-tight-fitting covers for said openings, substantially as and for the purposes described.

4. A ventilating coffin having openings at both ends covered with a fine-wire fabric, for the purpose specified.

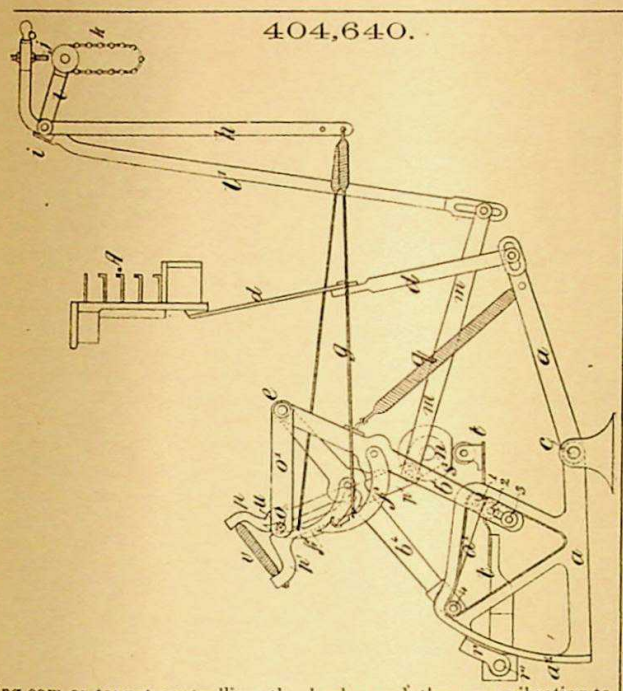
5. The combination, with a coffin having open ends covered by a wire fabric, of the end pieces or covers H, the center pieces G, and the fastening-screws for securing said end pieces to the said center pieces, substantially as specified.

404,640. SHUTTLE-BOX MECHANISM FOR LOOMS. JOHN MATHIESON, Glasgow, County of Lanark, Scotland. Filed Nov. 8, 1887. Serial No. 254,662. (No model.) Patented in England Apr. 14, 1887, No. 5,407, and in France July 9, 1888, No. 184,708.

Claim.—1. In a loom drop-box motion, the lever *a*, the operating-spring, and the drop-box connected to the lever, in combination with vibrating arms provided with hooks, pattern mechanism controlling the hooks, a lifter for the hooks, and mechanism to operate the lifter, all substantially as set forth.

2. In a loom drop-box motion, the lever *a*, the drop-box, a spring to raise the drop-box, a brake to hold the lever, a holding or releas-

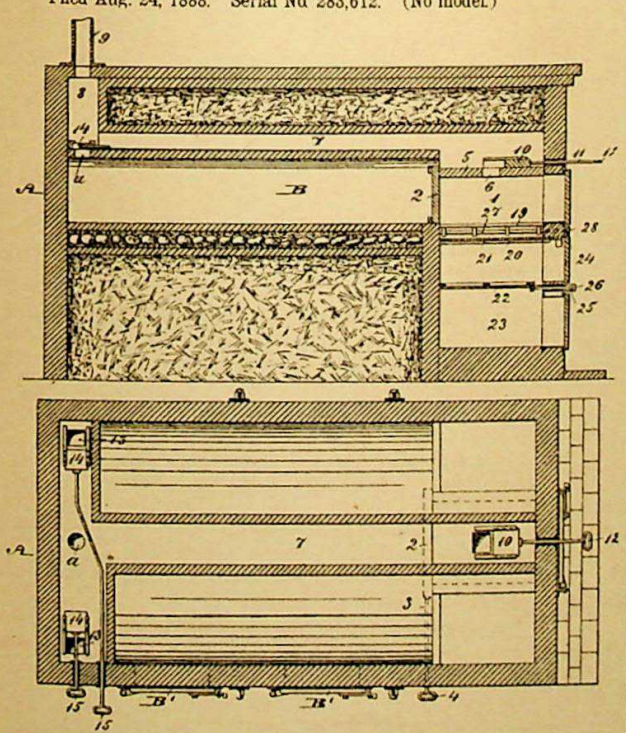
404,640.



ing cam or tappet controlling the brake, and the arms vibrating to raise one arm of the lever *a*, and thereby to lower the drop-box, in combination with hooks on the vibrating levers, pattern mechanism acting on the hooks, a lifter-bar, and means for operating the latter, all substantially as described.

3. The drop-box, the lever *a* controlling the drop-box, vibrating arms of varying length to rock the said lever on its fulcrum in one direction, and a spring to move the lever in the other direction, in combination with pattern mechanism for selecting the arms to be vibrated and with hooks connected to the arms, a vibrating lifter-bar, and mechanism to operate the latter, all substantially as set forth.

404,641. BAKER'S OVEN. JOHN H. MEIER, Philadelphia, Pa. Filed Aug. 24, 1888. Serial No. 283,612. (No model.)

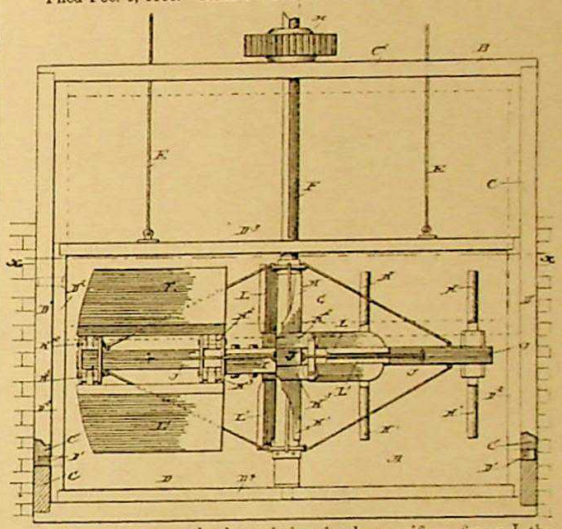


Claim.—1. A baker's oven having an inner body with chamber, a fire-chamber between said inner body and outer casing or wall, and a horizontal wall above the fire-chamber and connecting said inner body and outer casing or wall, said horizontal wall having an opening with valve, said parts being combined substantially as described.

2. A baker's oven having an inner body with chamber, a fire-chamber between said inner body and outer wall, a horizontal wall above said fire-chamber and having an opening with valve, and a channel above said inner body leading from said fire-chamber to a flue at the discharge end of the oven, said parts being combined substantially as described.

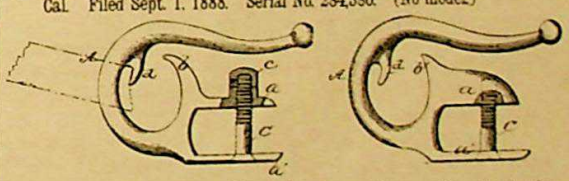
3. In a baker's oven, an inner body with chamber having an opening in its top, a fire-chamber, a slide between said chamber of the inner body and fire-chamber, a horizontal wall above said fire-chamber and connecting said inner body with outer wall and having an opening with valve, a channel above said inner body, and a flue communicating with said channel at the end of the oven and having openings with valve at its base, the opening in the top of the chamber of the inner body communicating directly with the flue, said parts being combined substantially as and for the purpose set forth.

404,642. WATER-WHEEL. LEE MIDDLETON, Clarksville, Mo. Filed Feb. 6, 1889. Serial No. 298,876. (No model.)



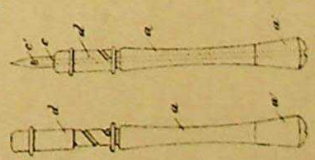
Claim.—A water-wheel consisting in the cruciform frame I, the arms J, bolted thereto and provided with vertical bars K K' projecting from their upper and lower sides, upper and lower pairs of horizontal lugs K^2 K^3, projecting at right angles to the arms J, and the upper and lower gates L L', hinged at their adjacent edges to said lugs to swing vertically toward and from each other, the said arms K K' forming stops for the gates when they are in their vertical positions one above the other, substantially as set forth.

404,643. CHECKREIN-HOOK. GEORGE W. MOLIERE, Ocean View, Cal. Filed Sept. 1, 1888. Serial No. 284,380. (No model.)



Claim.—As an improved article of manufacture, the checkrein hook herein shown and described, consisting of the main part or hook proper A, having the two parallel shanks *a a'* provided with coincident holes to receive the screw which attaches the device to a harness-saddle, as specified.

404,644. CIGAR-HOLDER. HEINRICH MACHTANZ, Hanau, Prussia, Germany. Filed Mar. 23, 1888. Serial No. 268,313. (Model.) Patented in England Dec. 19, 1887, No. 17,443, and in Germany Jan. 6, 1888, No. 42,918.



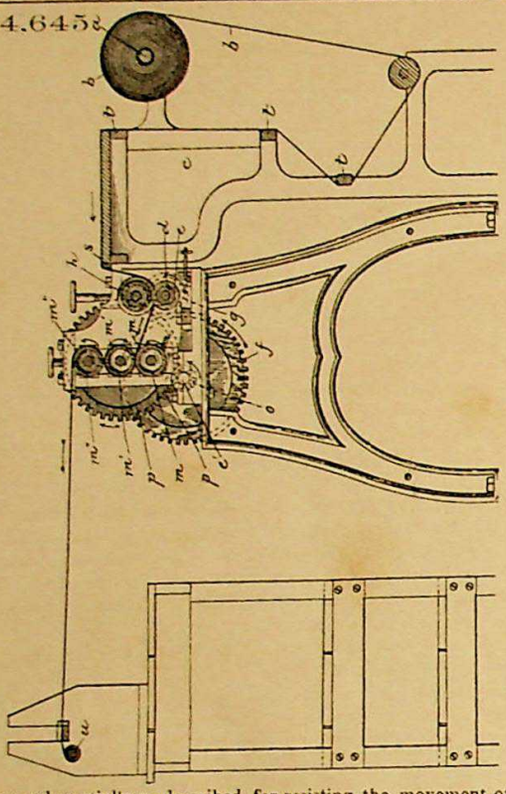
Claim.—1. A cigar-holder consisting of a smoke-tube, a holding-point on said tube provided with an opening leading to the interior of the tube, and a movable cap for covering said point when the holder is not in use, substantially as described.

2. A cigar-holder consisting of a smoke-tube, a holding-point, a box on said tube having threads on its periphery, and a covering-cap surrounding said box and in engagement with the threads thereof, substantially as described.

404,645. MACHINE FOR CUTTING CLOTH INTO STRIPS. JOHN G. MCCARTER, Boston, Mass. Filed Jan. 12, 1889. Serial No. 296,189. (No model.)

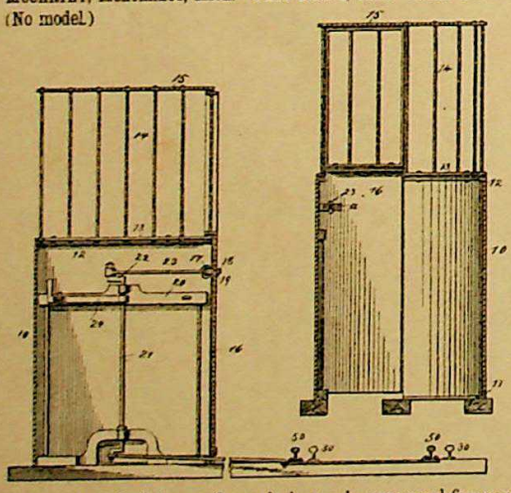
Claim.—In a machine for cutting sheet material into strips, the combination of a grooved idle-roll, a roll or shaft having a series of disk-knives coinciding with and entering the grooves of the idle-roll,

404,645.



means, substantially as described, for resisting the movement of the material to the knives and grooved roll, a support *s*, arranged as described with relation to the grooved roll and knives, whereby the material is held upon a portion of the periphery of said roll before reaching the knives, feed-rolls arranged at the opposite side of the grooved roll and knives from the support *s*, mechanism for rotating the feed-rolls in the direction required to draw the material from the grooved roll and knives, and mechanism for rotating the knives in a direction opposite to the movement imparted by the feed-rolls to the material, as set forth.

404,646. LOCK-HOUSE FOR SWITCH-STANDS. WILLIAM J. MCCARTHY, Menominee, Mich. Filed Feb. 4, 1889. Serial No. 298,608. (No model.)



Claim.—1. A lock-house for switch-stands, arranged for connection with the switch-ties and formed with an upper barred section, substantially as described.

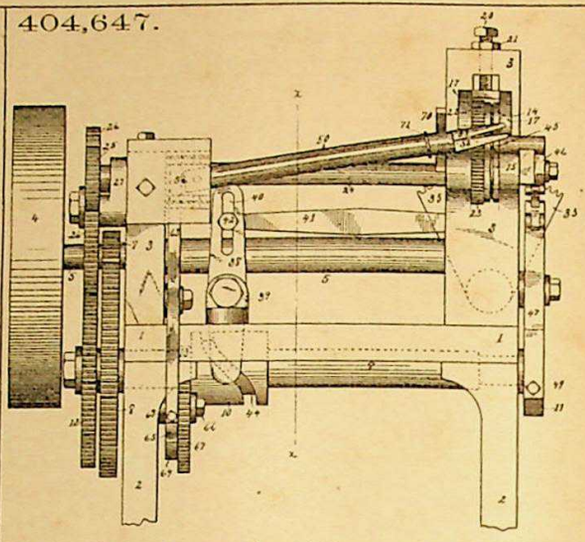
2. In a lock-house for switch-stands, the combination, with a lower sheet-metal section, of an upper barred section and a roof, substantially as described.

3. The combination, with a switch-stand, of a shaft formed with an upper crank, a house within which the stand is arranged, an eye connected to the house-door, and a link connecting the upper crank and the eye, substantially as described.

404,647. HAT-WIRE MACHINE. BERNARD MCCUSKER, Bridgeport, Conn., assignor of one-half to George J. Brown, same place. Filed Sept. 14, 1888. Serial No. 285,370. (No model.)

Claim.—1. In a machine of the class described, the combination, with the feed-rollers, of the twisting-sleeve 30, provided with a holding device and with a pinion 31, the segment-gear engaging said pinion, the

404,647.



lever 38, the cam for operating said lever, and the link 41, connecting said lever with said segment-gear.

2. In a machine of the class described, the combination, with the feed-rollers, of the twisting-sleeve 30, provided with a holding device and with a pinion 31, the segment-gear engaging said pinion and provided with the slot 37, the link 41, adjustably attached at its forward end to said segment-gear at said slot, the lever 38, to which the rear end of said lever is connected, and the cam for operating said lever.

3. In a machine of the class described, the combination, with the feed-rollers, of the twisting-sleeve 30, provided with a holding device and with a pinion 31, the segment-gear engaging said pinion and provided with slot 37, the lever 38, provided with slot 40, the cam for operating said lever, the link 41, and screw-studs 42 for adjustably attaching said link to said lever and segment-gear.

4. The combination, with the feed-rollers and the shaping-roller, of a lever 46, whereby said roller is carried, a lever 47, engaging lever 46, a rotating cam engaged by lever 47, and adjustable contact portions on said levers, whereby the movement of the shaping-roller may be varied to give any desired shape to the hat-wires.

5. The combination, with the feed-rollers, of a tube provided with a longitudinally-extending stationary cutter, a movable cutter pivoted to said tube and having a lug 54, and a rock-shaft within said tube, and provided at its end with a cam engaging said lug to operate said movable cutter.

6. The combination, with the feed-rollers, of a tube provided at the end with a stationary cutter extending lengthwise thereof, a movable cutter pivoted to said tube and provided with a lug 54, a rock-shaft within said tube and having at one end a cam to engage said arm to operate said cutter and provided at its opposite end with an arm, and a rotating disk having a cam to engage said arm to operate said rock-shaft.

7. The combination, with the feed-rollers, the tube carrying a stationary cutter and a movable cutter pivoted within the tube and having a lug 54, of a rock-shaft within the tube having a cam engaging said lug, a universal joint connecting the tube with the frame-work, a bracket to support the forward end of the tube, and a spring whereby it is retracted to position.

8. In a machine of the character described, the combination, with the feed-rollers, of an oscillating twisting-sleeve provided with a holding device and through which the wire passes to said rollers, a shaping-roller adjacent to said feed-rollers, a vibrating lever to carry said shaping-roller in the arc of a circle, and a cutting device to sever the wire at predetermined times, and consisting of a tube provided at one end with a longitudinally-extending stationary cutter, a movable cutter pivoted to said tube and having a lug 54, and a rock-shaft within said tube and having at one end a cam engaging said lug to operate said movable cutter.

404,648. TROUSERS-STRETCHER. DAVID F. MCNAIR, Wilkes-Barré, Pa. Filed Feb. 12, 1889. Serial No. 299,586. (No model.)

Claim.—1. In a trousers-stretcher, the combination, with an upper frame and a lower frame pivoted therein, of a clamp-bar sliding in the frame and capable of contact with the under face of the upper cross-bar of the upper frame, and a similar clamp-bar capable of contact with the inner face of the lower cross-bar of the lower frame, wedge-bars hinged to the upper and lower frames, engaging respectively the upper and lower sliding clamp-bars, and a lock-bolt capable of sustaining both frames in the same plane, substantially as shown and described.

2. In a trousers-stretcher, the combination, with an upper frame

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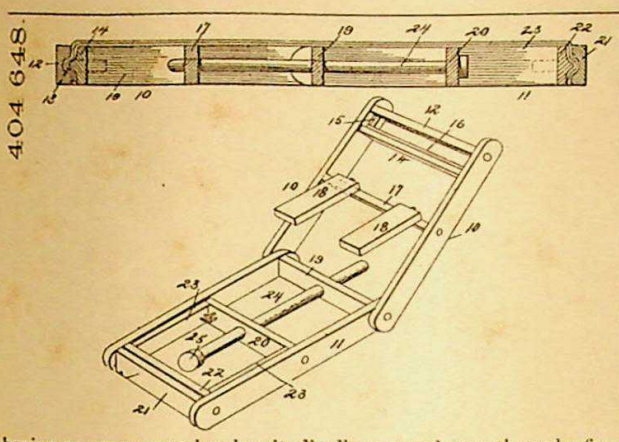
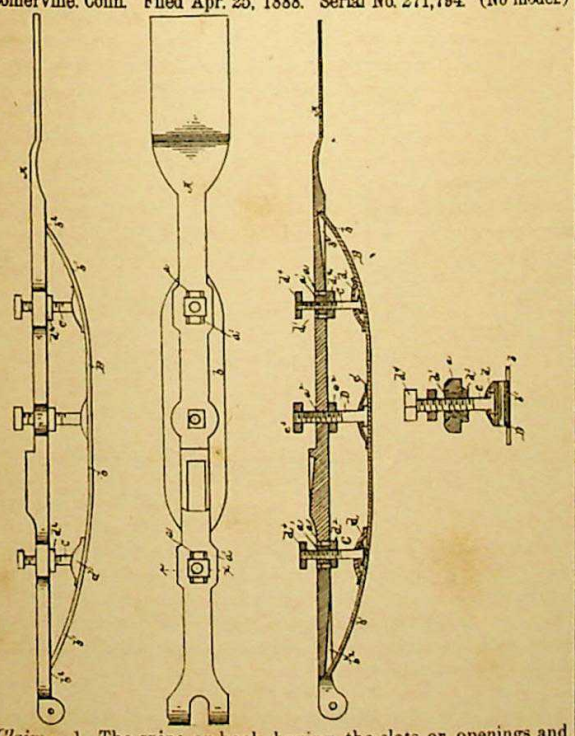


having an upper cross-bar longitudinally grooved upon the under face and a sliding clamp-bar provided with a rib adapted to enter said groove, of a lower frame pivoted in the upper frame, having a lower cross-bar grooved upon the upper face, a sliding clamp-bar provided with a rib capable of entering the groove of the lower cross-bar, a bolt locking the two frames in the same vertical plane, and means, substantially as shown and described, for locking the clamp-bars against the cross-bars, all combined for operation as and for the purpose specified.

3. In a trousers-stretcher, the combination, with an upper frame provided with an upper cross-bar having a groove in the under face, a sliding clamp-bar having a rib produced upon the upper face capable of entering the said groove, and an intermediate cross-bar, of a lower frame pivoted to the upper frame, provided with an intermediate cross-bar, a lower cross-bar having a groove in the under face, a clamp-bar sliding in the lower frame and provided with a rib adapted to enter the said groove of the lower cross-bar, wedge-bars hinged to the intermediate cross-bars of the upper and lower frames capable of exerting pressure upon the clamp-bars, and a bolt held to slide through the intermediate cross-bars of the frames, locking the same in a parallel vertical position, substantially as shown and described.

404,649. SHUTTLE-BINDER FOR LOOMS. SAMUEL J. NOISEUX, Somerville, Conn. Filed Apr. 25, 1888. Serial No. 271,794. (No model.)

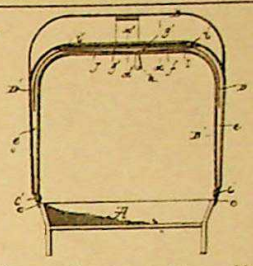


Claim.—1. The spine or back having the slots or openings and the spring or bow having rods or bolts loosely secured thereto, and provided with guide-blocks resting in said slots or openings, and having threaded apertures through which said rods or bolts project, substantially as shown and described.

2. The combination, with the spine or back, of the spring or bow, the nutted rods or bolts secured thereto and projecting through apertures in said spine or back, and the guide-blocks wherein work said rods or bolts, substantially as shown and described.

404,650. CARRIAGE-TOP. JOHN T. NOONEN, Laramie, Wyo. Filed Nov. 6, 1888. Serial No. 290,131. (No model.)

404,650.



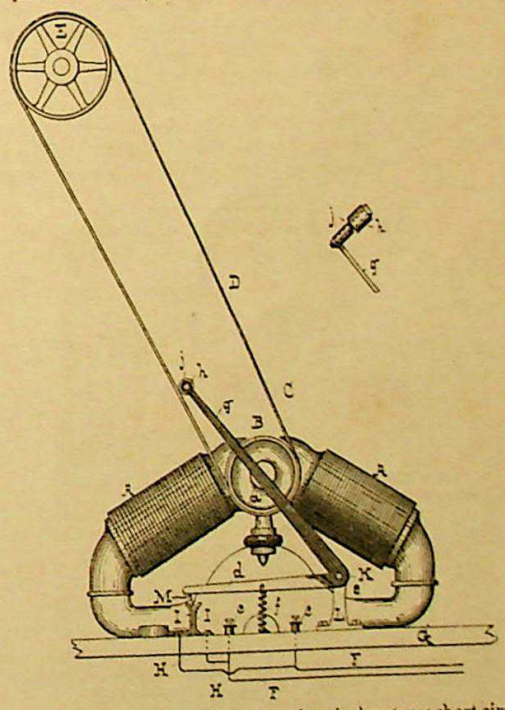
Claim.—1. In a carriage-top, and in combination with the longitudinally-slotted bow, the two curtains passed therethrough and arranged to slide vertically therein, said curtains being connected and constructed to operate in unison.

2. In a folding carriage-top, a series of bows jointed together to open and close, each bow provided with a longitudinal slot extending therethrough from front to rear, in combination with side curtains passing through the bars and arranged to slide upward and downward therein, and a sliding connection between the upper edges of said curtains.

3. In a carriage-top, a series of bows, each having a longitudinal slot opening therethrough from front to rear, curtains passing loosely through said slots and adapted to slide vertically therein, in combination with the operating device connected to said curtains and located within reach of the occupant of the vehicle, whereby he is enabled to raise or lower the curtains at will.

4. In a carriage-top, and in combination with the vertically-sliding curtains D D′, the two guide-rods, the handle *h*, the guide-pulleys *i i′* at the opposite sides, and the two cords extended around said guide-pulleys and connecting the curtains, as described.

404,651. SAFETY ATTACHMENT FOR ELECTRIC MOTORS. WILLIAM S. PACA, Baltimore, Md., assignor of one-half to John P. Paca, same place. Filed Jan. 11, 1889. Serial No. 296,073. (No model.)



Claim.—1. In combination with an electrical motor, a short circuit around the motor and a circuit-closer sustained from contact with the terminals of the short-circuit wires by means of the driving-belt, substantially as specified.

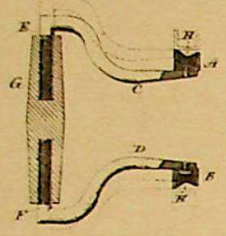
2. In combination with an electrical motor, a short circuit around the motor having spring-terminals, and a bell-crank one arm of which carries a short-circuit closer and the other a roller adapted to rest on the driving-belt, substantially as specified.

3. In combination with an electrical motor, a short circuit around the motor, and a bell-crank one arm of which carries a short-circuit closer and the other a roller adapted to rest on the driving-belt, substantially as specified.

4. In combination with an electrical motor, a short circuit around the motor and a short-circuit closer sustained from contact with the said short circuit by means of a roller, which rests on the driving-belt, substantially as specified.

5. In combination with an electrical motor, a short circuit around the motor and a pivoted arm sustained by the driving-belt carrying a short-circuit closer, substantially as specified.

404,652. VETERINARY MOUTH-SPECULUM. CHAS. E. PALMER, New Haven, Conn. Filed Mar. 25, 1889. Serial No. 304,634. (No model.)

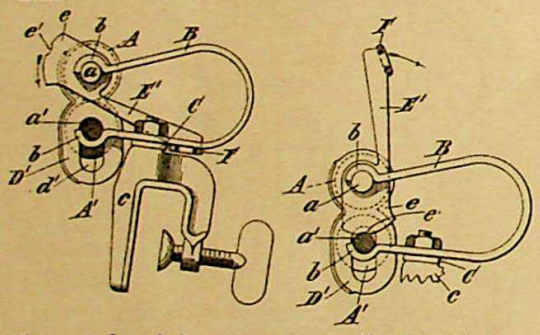


Claim.—1. A mouth-speculum consisting of a vertical handle provided with arms extending from the respective ends of the handle, combined with jaw-plates pivoted to the end of said arms, substantially as and for the purpose described.

2. The combination of the two jaw-plates, arms extending from said plates, the outer ends of the arms turned toward and into line with each other, a handle arranged upon the said ends of the arms and so as to rotate thereon, one of the said arms screw-threaded, and the handle correspondingly screw-threaded, and whereby under the rotation of the handle the said arms and the jaw-plates separate or approach each other, as the case may be, substantially as described.

3. A mouth-speculum consisting of a pair of arms, with means, substantially such as described, for supporting the said arms distant from each other, a jaw-plate pivoted upon the ends of said arms, the said jaw-plates provided with india-rubber cushions, substantially as and for the purpose described.

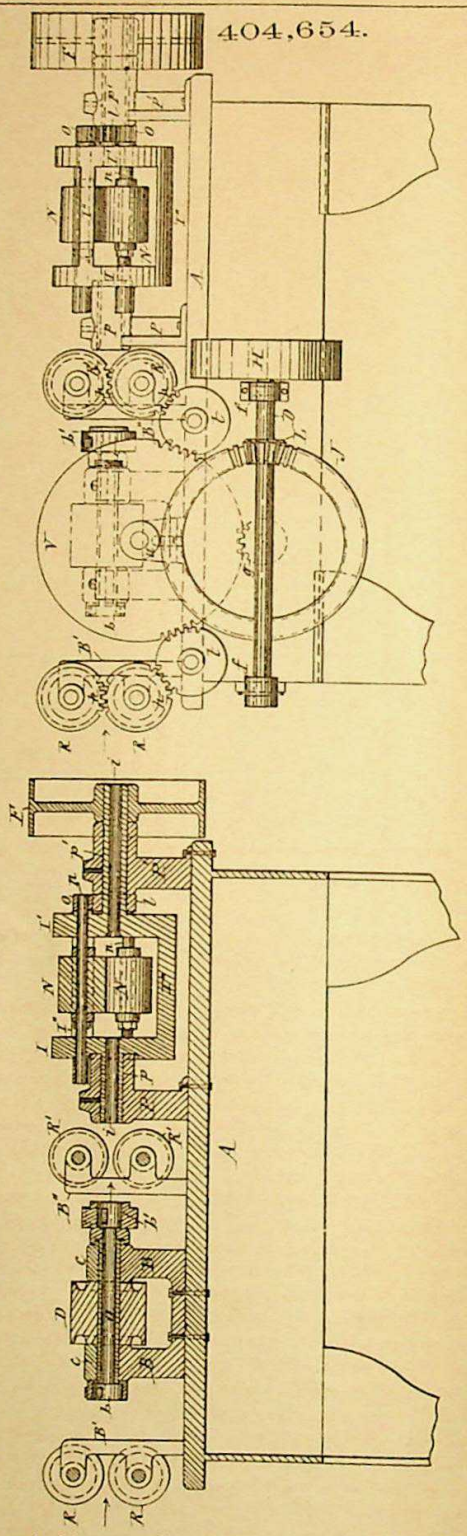
404,653. CLOTHES-WRINGER. LEWIS C. PARKER and BERNHARD VOGES, Cincinnati, Ohio. Filed Feb. 11, 1889. Serial No. 299,470. (No model.)



Claim.—1. In a clothes-wringer, the combination, with the rubber rolls A A′, having shafts *a a′*, and U-springs B B, having outer sockets or bearings *b b* for said shafts, of the inflexible or stiff levers E E′, having longitudinal projections or cams *e* at their inner ends, and a flat cross-bar F, connecting their outer ends, the said levers being pivotally mounted upon the upper roll-shaft intermediate the opposite ends of the rubber roll and the U-springs, with their cams *e* normally out of engagement with any of the parts and readily brought into engagement with the periphery or face of the lower roll-shaft to spread the two rolls apart and relieve them of unnecessary pressure when not in use, substantially as herein set forth.

2. In a clothes-wringer, the combination, with the rolls A A′, shafts *a a′*, U-springs B B, shields D D′, and the bracing or tie bar C, of the levers E E′, having cams *e*, and cross-bar or apron F, journaled to one of said shafts, said cams having concave notches *e e′*, which engage the other of said shafts, substantially as and for the purpose specified.

404,654. MACHINE FOR MANUFACTURING CYLINDRICAL RODS. HENRY H. POST, Oswego, N. Y. Filed Oct. 1, 1888. Serial No. 286,880½. (No model.)



Claim.—1. The combination, with the pedestals P P′, formed with journal-boxes, hollow shafts *i i*, mounted in said boxes, heads I I′, rigidly attached to said shafts, driving-pulley F, attached to one of said shafts, shafts *n n*, journaled in said heads, and abrading-cylinders N N, and pinions *o o*, attached to the latter shafts, as shown, of the stationary gear-wheel *l*, meshing with the said pinion and rigidly attached to the journal-box of one of the pedestals, substantially as described and shown.

2. The improved machine for forming cylindrical rods, consisting of the bed A, pedestals B B B′ B″ and P P′, mounted on said bed, the hollow shaft *a*, journaled in the pedestals B B, pulley D, secured to said shaft between the pedestals, cutter-heads *b b′*, secured to opposite ends of the aforesaid shaft, feed-rollers R R, pivoted to the pedestal B′ and formed with V-shaped grooves in their peripheries, guide-rollers R′ R′, pivoted to the pedestal B″ and formed with U-shaped grooves in their peripheries, the heads I I′, rigidly united and having hollow journals *i i*, mounted in the boxes of the pedestals P P′, the gear-wheel *l*, fixed to one of said boxes, the shafts *n n*, journaled in the heads I I′, the abrading-cylinders N N, secured to said shafts, pinions *o o* on the ends of the shafts, meshing with the aforesaid gear-wheel, and the pulley F, attached to one of the journals *i*, substantially as described and shown.

404,655. GRAIN-PRESS. WILLIAM PRESTON, Brooklyn, N. Y., assignor of one-half to James J. Kelly, same place. Filed Aug. 17, 1888. Serial No. 283,030. (No model.)

Claim.—1. The combination, with an outer supporting-casing having perforated inner side walls, a perforated bottom, and a solid end wall, of a series of double partition-walls severally formed of detachable perforated plates and interposed transverse cleats, and which abut against the solid wall of the casing at one end and its uprights at the other, hinged doors closing the openings between said uprights, followers moving longitudinally in the compartments formed by the double partition-plates between the solid wall at one end and the doors at the other, and mechanism, substantially as described, for actuating

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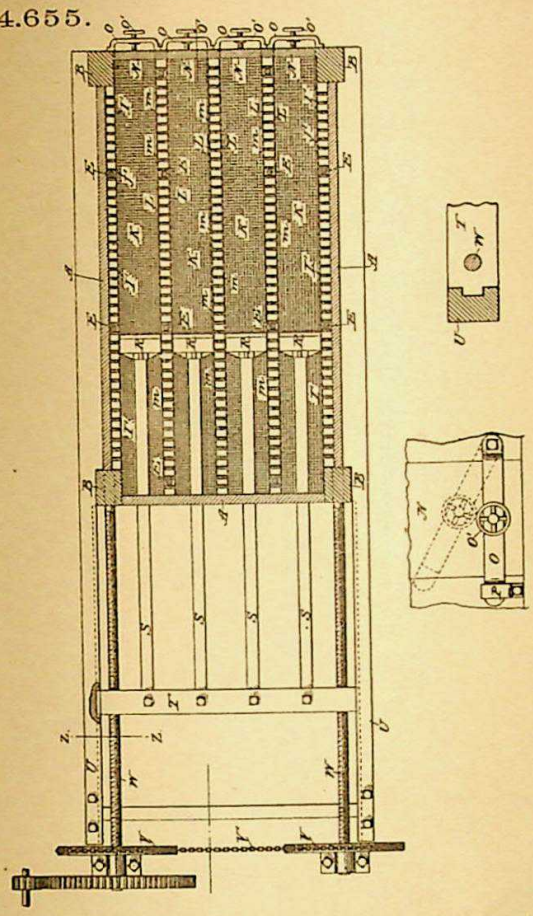


said plungers and moving them to and from the end door of each compartment, substantially in the manner and for the purpose herein set forth.

2. The combination, with an outer supporting-casing having perforated inner side walls, a perforated bottom, and a solid end wall, of a series of double partition-walls severally formed of detachable perforated plates and interposed transverse cleats and which abut against the solid wall of the casing at one end and its uprights at the other, doors closing the openings between said uprights, followers moving longitudinally in the compartments formed by the double partition-plates between the solid wall at one end and the doors at the other, mechanism, substantially as described, for actuating said plungers and moving them to and from the end door of each compartment, a yoke spanning the openings for each door to limit its outward movement, and a set-screw working through said yoke to control said movement, all substantially in the manner and for the purpose herein set forth.

3. The combination, with an outer supporting-casing having perforated inner side walls, a perforated bottom, and a solid end wall, of a series of double partition-walls severally formed of detachable perforated plates and interposed transverse cleats, and which abut against the solid wall of the casing at one end and its uprights at the other, doors closing the openings between said uprights, followers moving longitudinally in the compartments formed by the double partition-plates between the solid wall at one end and the doors at the other, mechanism, substantially as described, for actuating said plungers and moving them to and from the end door of each compartment, double doors hinged at the top of the casing to extend transversely over its compartments, a batten-plate to cover the joint between each pair of doors, and a set-screw working against said batten through an upper cross-piece to fasten and secure the doors against internal pressure, substantially in the manner and for the purpose herein set forth.

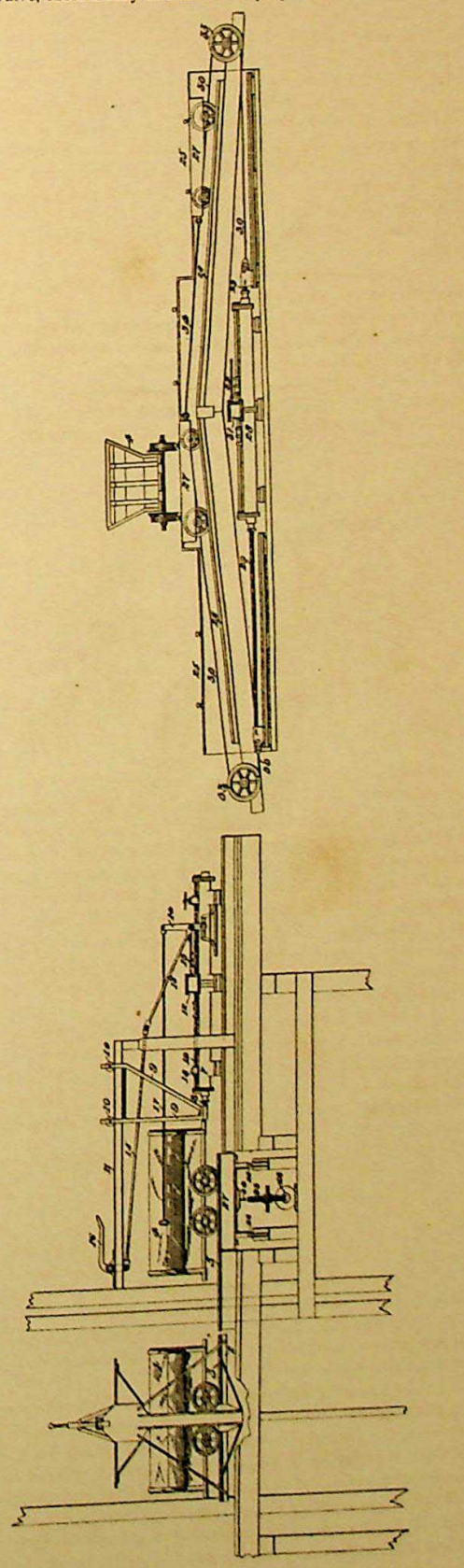
4. The combination, with an outer supporting-casing having perforated inner side walls, a perforated bottom, and a solid end wall, of a series of double partition-walls severally formed of detachable perforated plates and interposed transverse cleats and which abut against the solid wall of the casing at one end and its uprights at the other, doors closing the openings between said uprights, followers moving longitudinally in the compartments formed by the double partition-plates between the solid wall at one end and the doors at the other, a cross-head to which the followers are all secured, endless screws working through said cross-head, one at either end, gearing connecting said screws to cause them to rotate in unison, and mechanism for driving the same, substantially in the manner and for the purpose herein set forth.

404,656. APPARATUS FOR SHIFTING CARS. ROBERT RAMSAY, Mount Pleasant, Pa. Filed Feb. 25, 1889. Serial No. 301,064. (No model.)

Claim.—1. In devices for shirting cars, the combination of an inclined delivery-track, a pusher, an inclined return-track, a transverse carriage, and apparatus for operating the pusher and the transverse carriage, substantially as and for the purposes described.

2. In devices for shifting cars, a pusher having a steam or hydraulic cylinder, a piston or pushing-rod, and a reversing-valve, substantially as and for the purposes described.

3. In devices for shifting cars, a pusher having a steam or hydraulic cylinder, a piston or pushing-rod, a reversing-valve, and a check-valve, substantially as and for the purposes specified.



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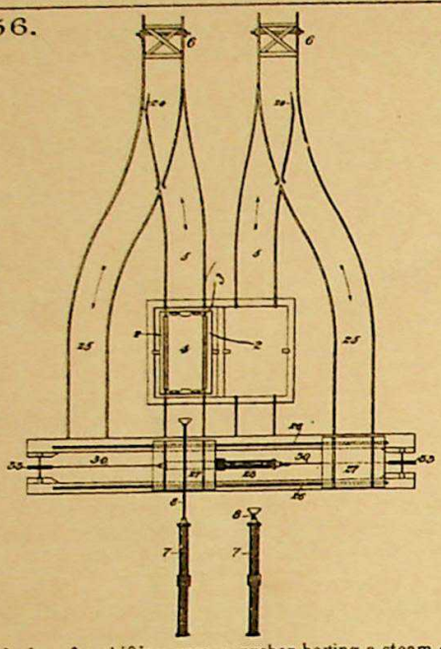
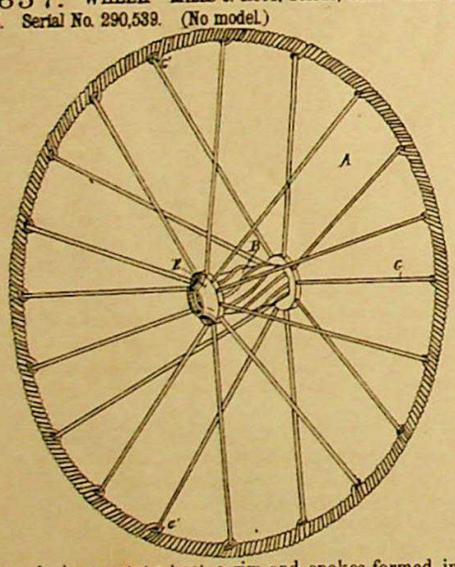


4. In devices for shifting cars, a pusher having a steam or hydraulic cylinder, a piston or pushing device, a reversing-valve, and an arm connected with the reversing-valve and arranged to be operated automatically, substantially as and for the purposes described.

5. In devices for shifting cars, a pusher having a steam or hydraulic cylinder, a piston, a reversing-valve, and a hand-lever connected with the reversing-valve, substantially as and for the purposes described.

404,657. WHEEL. MILES C. ROOT, Toledo, Ohio. Filed Nov. 12, 1888. Serial No. 290,539. (No model.)



Claim.—1. In a metal wheel, a rim and spokes formed integral by coiling the ends of the spokes to form the rim, as and for the purpose set forth.

2. In a metal wheel, a hub, in combination with spokes formed with horizontal portions confined upon the hub and bent at right angles thereto and spirally twisted to form a rim or tire, as and for the purpose set forth.

3. In a metal wheel, a hub, in combination with spokes secured to the hub and twisted at their free ends to form a rim or tire, each spoke being secured to any desired succeeding spoke, as and for the purpose set forth.

404,658. FREIGHT ELEVATING AND TRANSPORTING APPARATUS. WILLIAM H. RUSSELL, Vancouver, British Columbia, Canada, assignor of one-third to Gideon Robertson. Filed May 10, 1888. Serial No. 273,506. (No model.) Patented in Canada Feb. 18, 1888, No. 28,542.

Claim.—1. An apparatus for elevating and transporting freight, comprising a series of carriers and an elevator hinged together endwise to assume different elevations and angles, said carriers and elevator consisting of channels the bottoms of which consist of traveling aprons running over a driving-roller at each end and intermediate friction-rollers, said driving-rollers connected for transmitting motion from one to another, and said elevator-apron provided with brackets or tables to receive the packages, substantially as set forth.

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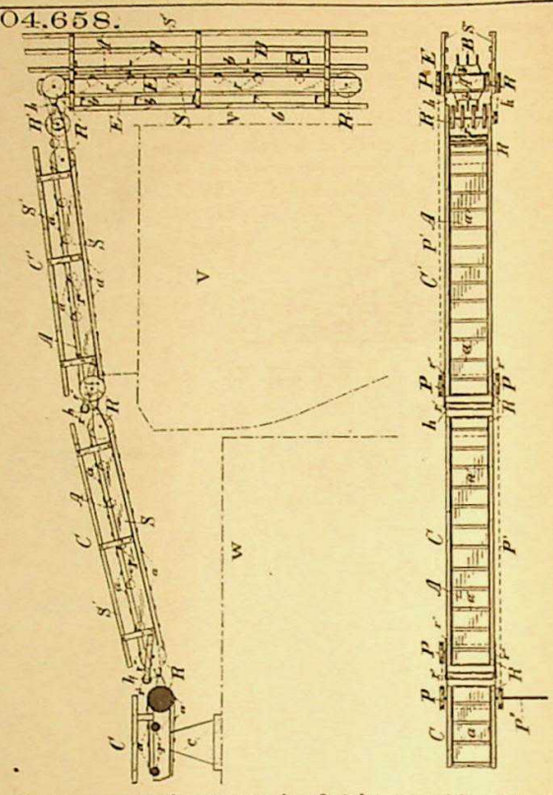
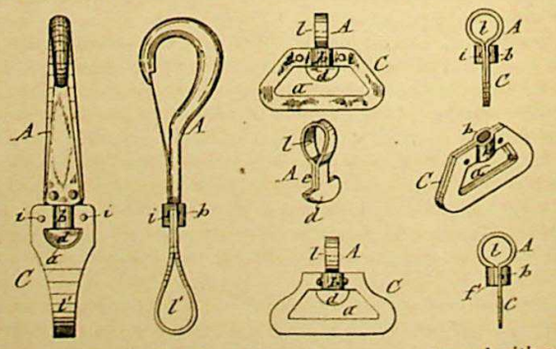


2. An apparatus for transporting freight, comprising sides S and framing S′, forming a channel, driving-rollers R, journaled at the ends, and some of them provided with pulleys P, friction-rollers *r*, journaled at intervals between the driving-rollers, suspended rollers *r″* at the joint, endless apron A, running over the driving-rollers and supported upon the friction-rollers, the hinges *h* at the ends of said sides, the rollers R′ *r′*, and chains P′ upon the said pulleys P, for receiving and transmitting motion, substantially as set forth.

3. An apparatus for elevating freight, comprising sides S and frames S″, forming a channel, driving-rollers R, journaled at the ends, and some of them having pulleys P, friction-rollers *r*, journaled at intervals between the driving-rollers, endless apron A′, running over the driving-rollers and supported upon the friction-rollers, and tables B *b*, secured to said apron, substantially as set forth.

4. An apparatus for elevating and transporting freight, comprising hinged carriers C, consisting of sides S S′, rollers R, *r*, and *r′*, apron A, and pulleys P, hinged carriers C′, consisting of sides S, rollers R and *r*, apron A, pulleys P, and grooved roller R′, elevator E, consisting of sides S S″, rollers R and *r*, apron A′, tables B *b*, and a pulley upon one of said rollers R, and the connecting-chains P′, substantially as set forth.

404,659. SWIVEL. JOHN F. SEARS, Clifton, Ontario, Canada, and HARRY E. KELLEY, Niagara Falls, N. Y., assignors to the Oneida Community, (Limited,) Community, N. Y. Filed Oct. 20, 1888. Serial No. 288,695. (No model.)

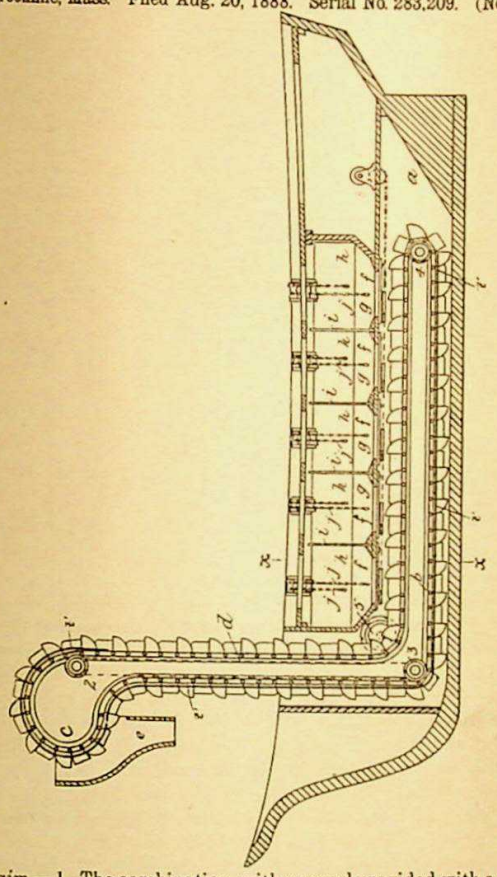


Claim.—1. A swivel consisting of a member formed with a neck and head on its coupling end, and a member formed of a metal plate folded upon itself with the end portions contiguous to each other and formed with semi-cylindrical recesses in the adjacent sides of said end portions embracing the aforesaid neck and provided with an aperture through the two thicknesses of metal between the integral end of folded plate and rear ends of the semi-cylindrical recesses, substantially as described and shown.

2. A swivel consisting of a member composed of a metal plate folded upon itself with the ends contiguous to each other and formed

with a coinciding neck and head on said ends, and a member having its coupling end composed of two thicknesses of metal firmly united and formed in the adjacent sides of said thicknesses with semi-cylindrical recesses embracing the aforesaid necks and provided with an aperture at the rear ends of said recesses for the reception of the aforesaid head, substantially as described and shown.

404,660. ELEVATOR AND CONVEYER. CHARLES J. SEYMOUR, Brookline, Mass. Filed Aug. 20, 1888. Serial No. 283,209. (No model.)



Claim.—1. The combination, with a vessel provided with a trough or way beneath the floor and above the keel, of a vertically-arranged elevator-frame at the end of such trough or way, an endless chain of buckets and pans arranged in said trough or way and on said elevator-frame, and wheels to move and guide said chain, whereby the coal or other contents of the vessel may be taken therefrom and carried directly to and up the elevator-frame to be discharged, as set forth.

2. The combination, with a vessel provided with a trough or way beneath the floor and above the keel, of a vertically-arranged elevator-frame at one end of such trough or way, said elevator-frame being provided with an overhanging head *c*, an endless chain of buckets and pans arranged in said trough or way and on said elevator-frame, and wheels or pulleys and tracks *t'* to move and guide said chain of buckets and pans, as set forth.

3. The combination, with a vessel provided with delivering holes or ports in its floor, of movable sections *g* of the floor, hinged at points at or near said delivering holes or ports, and leaves or shelves *h*, hinged to the side of the vessel, with their free edges in contact with said hinged sections of flooring, as set forth.

4. The combination, with a vessel provided with delivering holes or ports in its floor, of movable sections *g* of the floor, hinged at points at or near said delivering holes or ports, leaves or shelves *h*, hinged at the side of the vessel, with their free edges in contact with said hinged sections of flooring, and partitions *i* between each two sections, as set forth.

5. The combination, with a vessel provided with delivering holes or ports in its floor, of covers or cut-offs for said holes or ports, said covers or cut-offs being pivoted beneath the floor and provided with cables, whereby they may be swung around to close the ports or holes, or be moved in the opposite direction to open the same, tracks *m* beneath the free ends of the corners or cut-offs to support the same, and stops to limit the movement of the covers or cut-offs, as set forth.

404,661. ELECTRIC MOTOR. HENRY B. SLATER, Detroit, Mich., assignor to the Belding Motor and Manufacturing Company, Chicago, Ill. Filed Dec. 15, 1887. Serial No. 258,007. (No model.)

Claim.—1. In a dynamo-electric machine or motor, the combination, with its commutator and brushes, of a brush-holder provided

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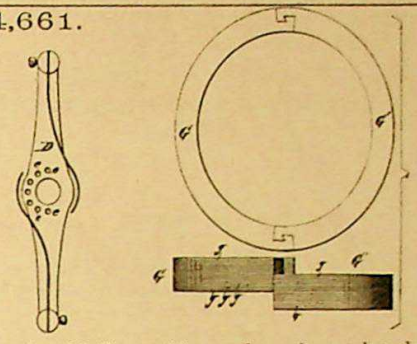
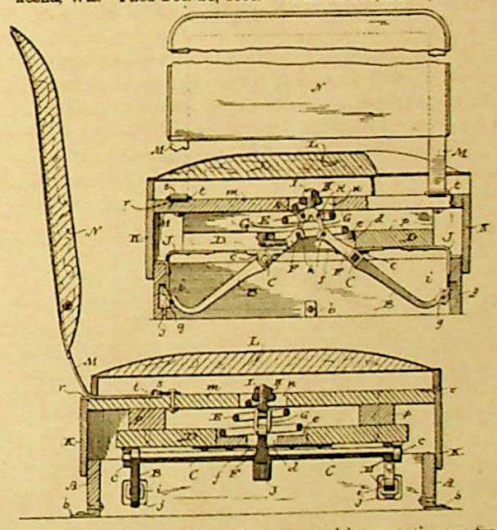


with a series of hollow cavities *e* and a spring pawl or detent *e'* for giving to it a substantially rigid engagement at each of a series of adjustments, said spring-detent and cavities being housed between the face of the brush-holder and the adjacent supporting part of the frame, substantially as and for the purposes described.

2. An armature-ring made in sections, having a dovetail tenon and groove, whereby said sections are adapted to be slipped together and engaged at their extremities, each said section composed of laminæ *g*, substantially as and for the purpose described.

404,662. LOCOMOTIVE-CAB SEAT. GEORGE W. STONE, Jr., Waukesha, Wis. Filed Dec. 21, 1888. Serial No. 294,280. (No model.)



Claim.—1. A locomotive-cab seat comprising a stationary frame, a spring-platform having a yielding connection with the stationary frame and adjustable as to tension, and a seat-supporting frame arranged on the spring-platform to surround said stationary frame and have telescopic movement with relation thereto, substantially as set forth.

2. A locomotive-cab seat comprising a stationary frame, a spring-platform having a yielding connection with the stationary frame and provided with brackets that extend down within the same and come close against the inner sides thereof, and a seat-supporting frame arranged on the spring-platform to surround said stationary frame and have telescopic movement with relation thereto, substantially as set forth.

3. A locomotive-cab seat comprising a stationary frame, a spring-platform having a yielding connection with the stationary frame, the seat proper, a supporting-frame therefor arranged on the spring-platform to have telescopic movement with relation to said stationary frame, eyes secured to the supporting-frame, and a back-rest having depending braces turned up at their ends to form hooks for engagement with said eyes, substantially as set forth.

4. A locomotive-cab seat comprising a stationary frame provided with lateral ears for attachment to a side box in a locomotive-cab, a spring-platform having a yielding connection with the stationary frame, and a seat-supporting frame arranged on the spring-platform to surround said stationary frame and have telescopic movement with relation thereto, substantially as set forth.

404,663. DEVICE FOR SECURING TOOLS TO HANDLES. FRANK H. THOMPSON and GEORGE P. TORMEY, Philadelphia, Pa. Filed Apr. 26, 1888. Serial No. 271,885. (No model.)

Claim.—1. A tool-handle with a bore extending lengthwise thereof, a rod with head and a screw-threaded end, and a wedge interiorly screw-threaded, said wedge being driven into said handle and the screw end of said rod inserted in said wedge and riveted to the wedge, said parts being combined substantially as described.

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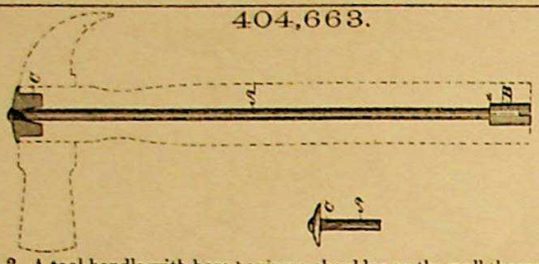
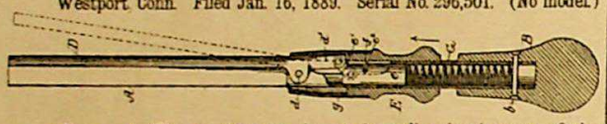


2. A tool-handle with bore having a shoulder on the wall thereof, as described, a wedge with an opening therein, a headed rod having one end inserted in said wedge and riveted thereon and its headed portion bearing against said shoulder, said parts being combined substantially as described.

3. A tool-handle with bore, a wedge with an opening therein, a rod having one end inserted in said wedge and riveted thereto, the other end having an attachment or projection adapted to engage a wall on the inner portion of the handle at an angle to the bore, substantially as described.

404,664. HAIR-CURLING IMPLEMENT. BENJAMIN L. TOQUET, Westport, Conn. Filed Jan. 16, 1889. Serial No. 296,501. (No model.)



Claim.—1. The combination, in a hair-curling implement, of the iron and its handle, the clamp, and an operating-sleeve which encircles the curling-iron and on the movement of which the clamp can be raised or lowered, substantially as described.

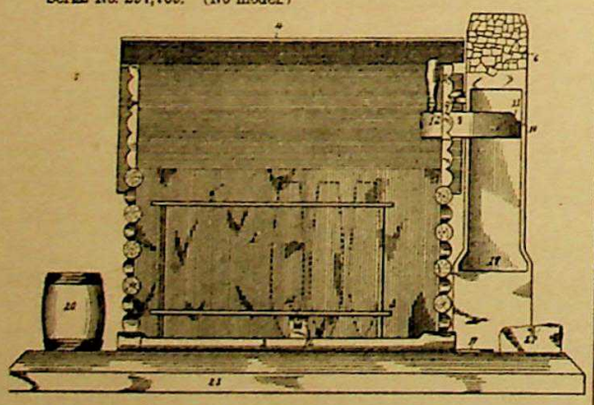
2. The combination, in a hair-curling implement, of the iron, the clamp pivoted thereto and having an arm connected to a plunger, a sleeve connected to the plunger, and a spring moving said plunger and tending to close the clamp, substantially as described.

3. The combination of the handle and the curling-iron extending into the handle with a pivoted clamp, a sliding sleeve connected to the clamp to open it, and a spring acting to close the clamp, substantially as described.

4. A curling implement having an iron with a pivoted clamp and a sleeve and a handle inclosing the working parts for moving the clamp.

5. The combination, in a hair-curling implement, of the iron hollow at its rear part and its handle with a clamp pivoted to the iron, a plunger in the hollow part of the iron, and a spring acting on said plunger to close the clamp, and a sleeve by which the clamp is opened and which incloses the working parts of the implement, substantially as described.

404,665. SMOKER'S SET. WILLIAM S. WHITING, Waterbury, Conn., assignor to Charles F. Trott, same place. Filed Jan. 28, 1889. Serial No. 297,769. (No model.)



Claim.—1. A smoker's set consisting of a case the front wall of which is hinged at the bottom and is provided with a cigar-holder, a hinged cover, a hinged operating-lever, and connecting mechanism, substantially as described and shown, operated by said lever, whereby the cover is raised and the front wall with the cigar-holder turned outward to place the cigars in position for use.

2. The case having a hinged front wall carrying a cigar-holder and a hinged cover having a downwardly-projecting arm 12, in combination with an operating-lever having a curved arm with an incline which engages arm 12 to raise and lower the cover, a bell-crank lever, and links 15 and 17, whereby the front wall and cigar-holder are moved, respectively, to the open and closed positions.

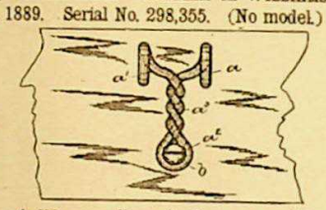
3. The case consisting of end and back walls 1, a front wall hinged to the end walls, and a hinged cover having an arm 12, in combination with an operating-lever having a curved arm extending into the case and provided with an incline which engages arm 12 to raise and lower the case, a bell-crank lever 13 within the case, and links 15 and 17, connected to the bell-crank lever and to the front wall and operating-lever, respectively, as and for the purpose set forth.

4. The combination, with the side and back walls, of a front wall hinged at the bottom and carrying a cigar-holder, an operating-lever, a bell-crank lever, and links connected, respectively, to the front wall and to the operating-lever, whereby said front wall and cigar-holder are thrown to the open and closed positions.

5. The combination, with the walls, of a hinged cover having a depending arm 12 and a hinged operating-lever having a curved arm 8, provided with an incline adapted to engage arm 12, whereby the cover is raised and lowered, respectively, when the operating-lever is moved inward or outward.

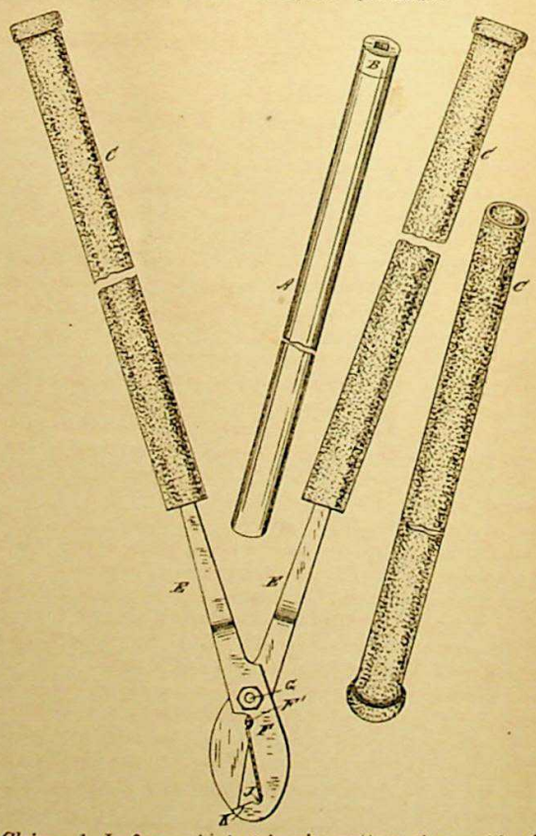
6. The combination, with the end and back walls, the front wall hinged thereto and carrying a cigar-holder, and an operating-lever having a curved arm extending within the case, of a hinged cover having an arm engaged by said curved arm, and mechanism, substantially as described and shown, operated by said lever, whereby the front wall is moved to the open or closed position and the cover is raised or lowered.

404,666. SASH-LIFT. WILLIAM A. WILLIAMSON, Newark, N. J. Filed Feb. 1, 1889. Serial No. 298,355. (No model.)



Claim.—A sash lift or pull made from a continuous piece of wire doubled and bent in the middle to form an eye for the reception of a screw or pin, and twisted, as at a^3, and the free ends thereof bent into hooks to form a pull portion, substantially as and for the purposes set forth.

404,667. FIREMAN'S ELECTRIC-WIRE CUTTER. DANIEL A. WOODHOUSE, Elizabeth, N. J., and THOMAS V. FORSTER, Brooklyn, N. Y. Filed Mar. 2, 1889. Serial No. 301,762. (No model.)



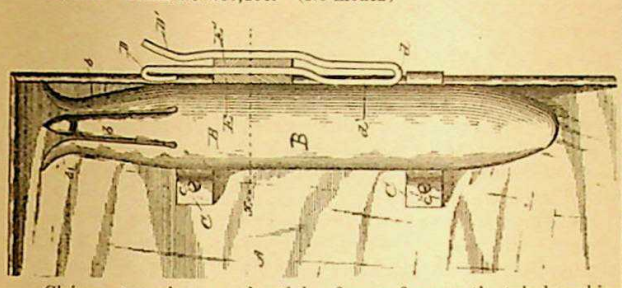
Claim.—1. In firemen's electric-wire cutters, the combination of metal handles for the said cutters, a wooden core provided with a hole in one end and fitted detachably upon each one of the metal handles, and a rubber tube surrounding and fitting tightly upon the said wooden core.

2. In combination with the metallic handles of a pair of wire-cutters, detachable insulated handles.

3. Insulated handles consisting of wooden cores provided with

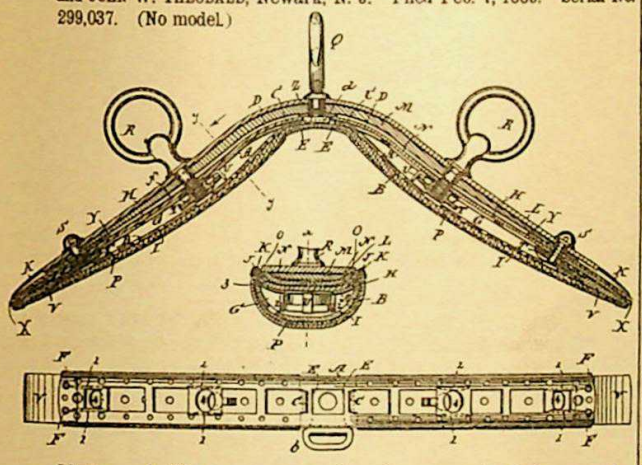
holes in the ends, in combination with rubber tubes having enlarged portions and passed over the said cores, the enlarged portions being at the ends of the said tubes and located upon the said cores at those ends opposite the ends of the cores containing the said holes.

404,668. WHIP-SOCKET. EMMA ALLEN, Freeport, Ill. Filed Oct. 26, 1888. Serial No. 289,190. (No model.)



Claim.—As an improved article of manufacture, the tubular whip-socket B, provided with spring-metal tongues *b*, continuous therewith, and forming a contracted neck and a flaring mouth for the socket, and with the U-shaped clips for attaching the socket to a vehicle.

404,669. HARNESS-SADDLE. HENRY ASCHENBACH, South Orange, and JOHN W. THEOBALD, Newark, N. J. Filed Feb. 7, 1889. Serial No. 299,037. (No model.)



Claim.—1. The combination, in a harness-pad, of the trough-shaped top plate A, having adjacent to the middle of its length the slots D and cross-bars E, with the under plates B, fixed at their outer ends to the top plate and having their inner ends passed through the said slots and loosely overlying the cross-bars, the cover-sections H I, surrounding the united plates, and the top pad-frame located in the trough of the top plate, substantially as described.

2. The combination, in a harness-pad, of the trough-shaped top plate A, provided with holes 4, and having the guiding-ribs 2 beside the holes 4, and provided with the slots D and cross-bars E, the under plates B, having their side edges turned upward and resting against and supporting the edges of the top plate, said under plates fixed at their outer ends to the top plate, bearing upon the guiding-ribs, and at their upper ends passing through the slots and overlying the cross-bars of the top plate, the cover-sections H I, surrounding the united plates, the top pad-frame L M N, located in the trough of the top plate, the nuts T between the guiding-ribs, and the terrets R, engaging the nuts, substantially as described.

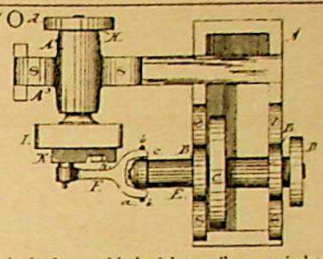
3. The combination, in a harness-pad, of the top plate A, provided with holes 4, and having the guiding-ribs 2 at the sides of the holes 4, and provided with the pendent stop-hooks U, the nuts T, located between the ribs and bearing against the stop-hooks, the under plates B, and the terrets R, substantially as described.

4. The combination, in a harness-pad, of the metallic top plate A, trough-shaped on its upper side, the under metallic plates B, having their side edges bent upwardly and supporting the edges of the top plate, said under plates being fixed at their outer ends to the top plate and loosely connected to the latter at their inner ends, the cover-sections H I, surrounding the united plates, and the top pad-frame L M N, located in the trough-shaped upper side of the metallic top plate, substantially as described.

404,670. GRINDSTONE AND MECHANISM FOR THE SAME. HENRY A. AXTELL, Montague, Mass. Filed July 27, 1888. Serial No. 281,159. (No model.)

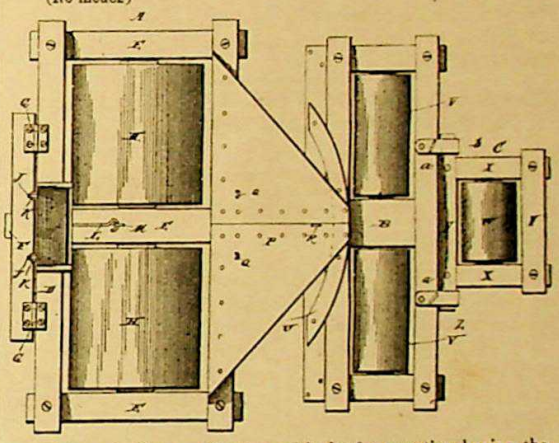
Claim.—The combination, with a rotary shaft and a pulley fixed thereon, the grooved head-block fixed to said shaft, and the block K, adjustably secured to said head-block by a bolt, the head of which fits in the groove of the said block, of a shaft arranged at right angles to

404,670



the head-block shaft, provided with a pulley, a grindstone, and a loose collar, substantially as described, and the pitman, as described, pivoted to the said loose collar, and the block K, as and for the purpose described.

404,671. ROLLER FOR LEVELING SNOW OR ROADS. ISAAC B. BABCOCK, Newport Centre, Vt. Filed Jan. 23, 1889. Serial No. 297,280. (No model.)



Claim.—1. The combination, with the front section having the platform P, of the loops K M on the front cross-bar and the central longitudinal bar of the frame, respectively, the loops Q R on the platform, the seat having the hooks J, adapted to engage the loops K or Q, and the brace L, pivoted to the seat and having its lower end adapted to engage the loops M or R, as set forth.

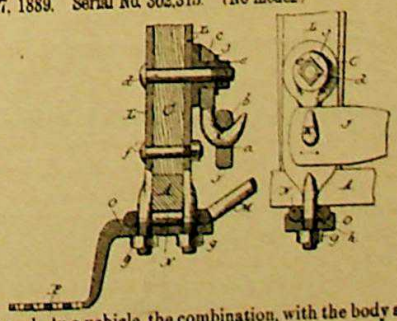
2. The combination of the front section having a central rearwardly-extended bar, the vertically-disposed roller O, secured to the end of said bar, the middle section having a forwardly-extended central bar connected by a universal joint with the front section, and the curved track U, secured on the upper side of the middle section, over which the roller O moves, as set forth.

3. The combination of the middle section having its front cross-bar provided with circular ends, the keepers pivoted to the rear cross-bar of the middle section and adapted to be swung over the circular ends of the front cross-bar of the rear section, and the locking-pins passed vertically through the keepers into the bar, to which they are pivoted, as set forth.

4. The combination of the middle section, the keepers pivoted thereto, and the rear section having its front cross-bar provided with a front convex side and engaged by said keepers, as set forth.

5. The combination of the front section having the rearwardly-extended bar E, the roller O on the rear end of said bar, the tongue hinged to the front end of said section, the seat movably mounted thereon, the middle section loosely connected to the front section, the track U on said section, over which the roller O moves, and the rear section hinged to the middle section, as set forth.

404,672. ROAD-CART. MONROE BARNES, Bloomington, Ill. Filed Mar. 7, 1889. Serial No. 302,315. (No model.)



Claim.—1. In a vehicle, the combination, with the body and shafts, of a spring secured to the body and connected at its ends with the front face of the shafts, and a sliding connection between the shafts and body.

2. In a vehicle, the combination, with the body, of the shafts, a

sliding connection between the body and shafts at the forward end of the body, a spring secured to the body near the rear end, and supports for the ends of the springs pivoted to the shafts.

3. In a vehicle, the combination, with the shafts, of the body connected therewith at its forward end by a sliding joint and a spring adapted to support the rear end of the body and pivotally connected with the shafts, said spring being adapted to adjust itself upon its supports as the body rises and falls.

4. In a vehicle, the combination, with the shafts, of the body connected at its forward end with the shafts by a sliding connection and a spring supporting the rear end of the body and pivotally connected with the shafts, said spring being adapted to be extended lengthwise and to rock upon its supports as the body rises and falls.

5. In a vehicle, the combination, with the shafts, of the body connected at its forward end with the shafts by a sliding connection, a spring supporting the rear end of the body, and laterally swinging supports for the ends of the spring secured to the shafts, whereby when a weight is applied to the body it will move downward and backward and cause the spring to rock or tip relatively to its supports.

6. In a vehicle, the combination, with the shafts, of the body provided with forwardly-extending arms slotted, as shown, U-shaped clips on the under side of the shafts, a cushion within the clips, and a bolt for each clip, all arranged substantially as shown.

7. In a vehicle, the combination, with the shafts and the body connected therewith at its forward end by a sliding joint, of hooks secured to the shafts on their forward faces and adapted to swing only laterally or at right angles to the line of draft, and a spring secured to the body and provided with rounded bearing-faces where it connects with the hooks, all substantially as shown.

8. In combination with the shafts, the sleeved washer secured thereto, the hook mounted on the washer, a bolt and nut securing the washers to the shafts and the hooks to the washers, a body, and springs connecting the body and the hooks.

9. In combination with an axle or bar, a brace-rod provided with an eye, and a plate O, provided with a socket in its upper face to receive and hold the eye against the bar or axle, all substantially as shown.

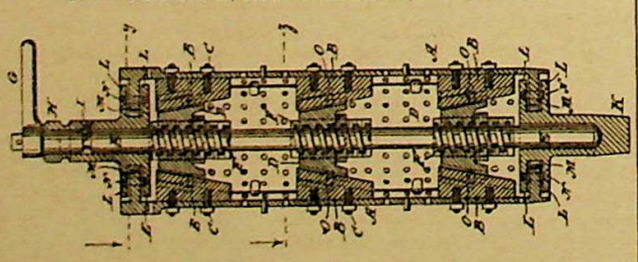
10. In combination with an axle and the shafts, the plates L, provided with threaded tangs, a brace-rod provided with an eye, a plate O, provided with a socket in its upper face to receive the eye, and bolts applied to the tangs.

11. In combination with an axle and the shafts, a brace-rod M, provided with an eye N, a plate O, provided with a socket in its upper face to receive the eye, plates L L, applied to the shafts and provided with tangs to pass through the eye, and means for securing the parts in position.

12. In combination with the axle and shafts, the brace-rod M, provided with an eye N, a plate O, provided with a socket in its upper face to receive and hold the eye, and provided also with a rearward extension P, plates L L, provided with tangs passing through the eye N and plate O, and nuts applied to the tangs.

13. In a road-cart, the combination, with the wheeled frame and the shafts rigidly attached thereto, of the body connected at its forward end with the shafts by a sliding connection, a spring supporting the rear end of the body, and laterally-swinging supports for said spring, all arranged substantially as shown, whereby when a load is applied to the body it will move downward and backward, and thereby cause the spring to be extended lengthwise and to rock forward or backward relatively to and upon its supports.

404,673. CORE FOR CASTING. GEORGE H. BENNETT, Brooklyn N. Y. Filed Dec. 20, 1888. Serial No. 294,178. (No model.)



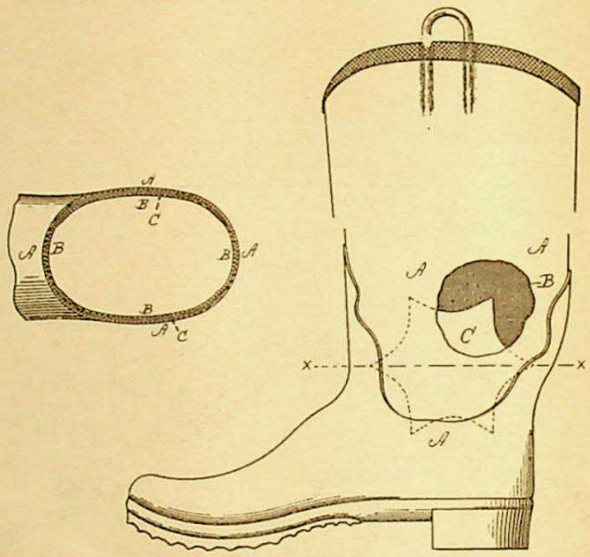
Claim.—1. A core for casting consisting of the sectional expansible shell having inclines, the travelers having screw-threaded sockets extending therethrough, and the rotary shaft supported in end bearings and having screw-threads engaging the screw-threads of the sockets to adjust the travelers, substantially as described.

2. A core for casting consisting of the sectional expansible shell having attached inclines provided with revolving rollers projecting beyond their inclined faces, the travelers having screw-threaded sockets and resting against the rollers on the inclines, and the rotary shaft mounted in end bearings and having screw-threads engaging the screw-threads of the sockets to adjust the travelers, substantially as described.

3. The combination of the sectional expansible shell having lips or projections M, the end bearings having flanges L joined to the lips or projections by pin-and-slot connection, the rotary shaft E, and means, substantially as described, for expanding the shell by the rotation of the shaft, substantially as described.

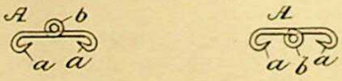
4. The combination of the expansible shell having lips or projections M, the end bearings having flanges L, arranged in pairs, receiving between them and guiding the lips or projections, the rotary shaft, and means for expanding the shell by rotation of the shaft, substantially as described.

404,674. RUBBER BOOT. ERSKINE F. BICKFORD, Malden, Mass., assignor to the Boston Rubber Shoe Company, same place. Filed Dec. 12, 1888. Serial No. 293,364. (No model.)



Claim.—In a rubber boot, an ankle-stay secured at the side of the ankle portion of the boot-leg between the lining and the rubber body, said stay having a series of radial points projecting in different directions laterally and vertically, which cross the lines on which there is any tendency to wrinkle and thereby prevent any continuous wrinkling and consequent breaking, substantially as set forth.

404,675. DOUBLE-POINTED PIN. JAMES H. BIRCH, Plattsburg, Mo. Filed Nov. 9, 1888. Serial No. 290,352. (No model.)



Claim.—The double-pointed pin or hook having a central looped or coiled portion forming a spring and having arms extending in the same straight line, and provided with inwardly curved and pointed ends, substantially as shown and described.

404,676. CAR-TRUCK. GEORGE E. BLAINE, Dayton, Ohio. Filed Oct. 5, 1888. Serial No. 287,262. (No model.)

Claim.—1. A bolster for railway-car trucks, consisting of a single plate of metal bent or rolled into the form, or substantially the form, of a hollow cylinder, with the longitudinal opposite or meeting edges of the plate unjoined, substantially as described.

2. A railway-car-truck bolster consisting of a single metal plate bent or rolled so that its longitudinal edges are brought opposite or directly meet, in combination with saddles and braces strengthening the bolster and preventing the longitudinal opposite ends of the plate from spreading, substantially as described.

3. In a car-truck, the combination, with a tubular bolster, of saddles secured upon and extending above the bolster and having openings or sockets extending therethrough, and arms located in said openings and supported by the saddles and provided with caps or seats on their upper ends, for the purpose set forth.

4. In a car-truck, a bolster composed of a bent or rolled metal plate and means for preventing the adjoining longitudinal ends of the same from spreading, in combination with the frames secured to the ends of the bolster for supporting the wheel-journal boxes, substantially as described.

5. A car-truck comprising a cylindrical bolster formed of a bent or rolled metal plate, in combination with saddles secured upon said bolster across and connecting the opposite ends of the plate forming the same, and thereby preventing the longitudinal edges from spreading, substantially as described.

6. A car-truck comprising a bolster formed of a metal plate rolled

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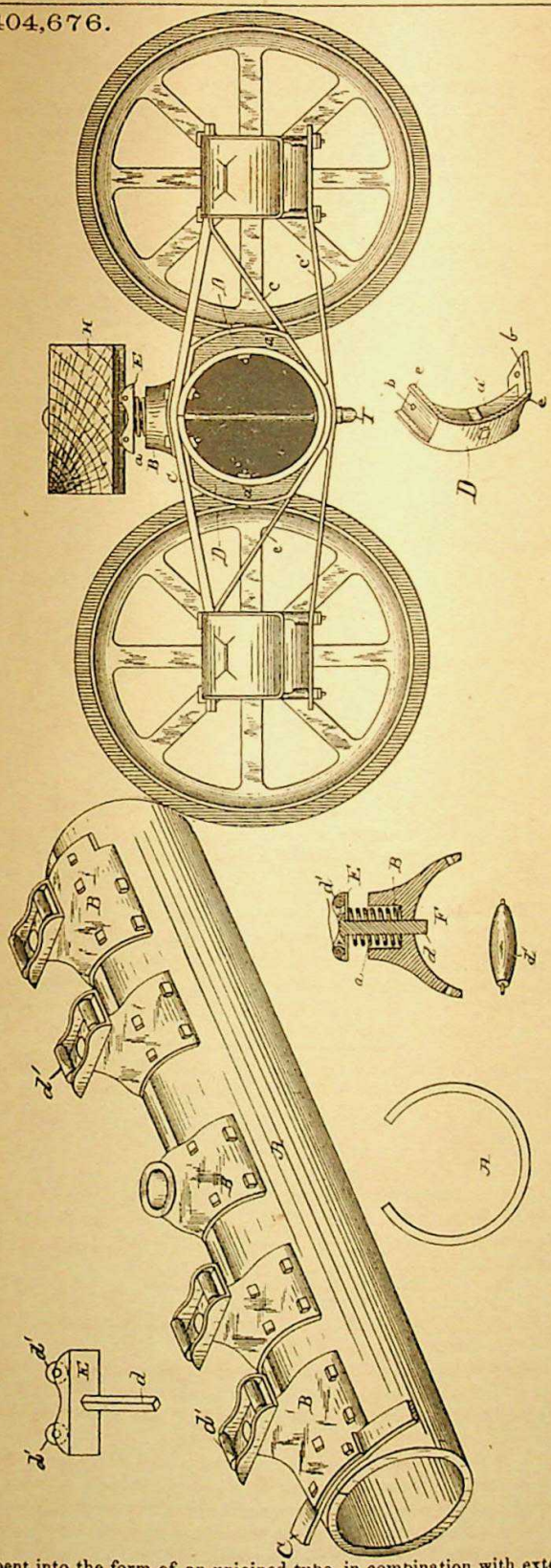


or bent into the form of an unjoined tube, in combination with exterior strengthening-braces secured to and partially embracing the same and preventing the bolster from spreading, substantially as described.

7. A tubular car-truck bolster, in combination with braces rigidly secured to the ends of the same, each provided with an inwardly-extending flange fitting upon the exterior of the bolster, and with wings at its opposite ends having side flanges forming seats and the arch and truss bars secured in said seats, substantially as described.

8. A tubular car-truck bolster and the arch and truss bars, in combination with curved strengthening-braces secured upon the exterior of the bolster and provided with end seats in which said bars are secured to prevent the same from bending, substantially as described.

9. In a car-truck, the combination of a metallic bolster, yielding arms supported by and extending above the bolster, and anti-friction rollers carried by the arms upon which the car-body rests, substantially as described.

10. In a car-truck, a bolster, in combination with vertically-yielding caps or seats supported by and located above the bolster, and anti-friction rollers mounted in the caps or seats, substantially as described.

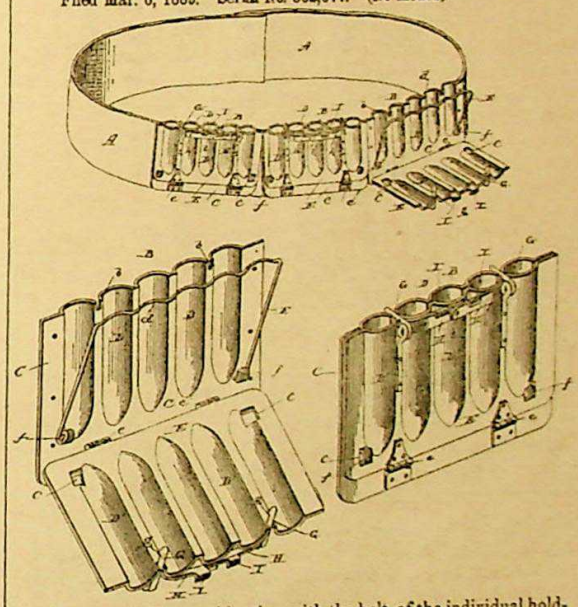
11. A tubular car-truck bolster, in combination with saddles secured upon the same and provided with openings extending therethrough, and vertically-movable arms carried by and extending above the saddles and provided with springs to yieldingly hold their upper ends at the limit of upward movement, for the purpose set forth.

12. In a car-truck, the combination of a bolster, saddles secured to the same and provided with openings or sockets, springs in the openings, caps or seats yieldingly supported by the springs and provided with downwardly-extending arms, and rollers mounted on the caps or seats, substantially as described.

13. In combination, a car-truck bolster provided with saddles, caps or seats yieldingly supported and carrying rollers, the central saddle having an opening, and a king-bolt secured to the car and extending through said opening, substantially as described.

14. In combination, a car-truck bolster having saddles, the central saddle having a socket and opening therethrough, a spring in the socket, a king-bolt carried by the car and extending through the spring and opening, and a cap or socket moving with the bolt and bearing on the spring, substantially as described.

404,677. CARTRIDGE-BELT. ANTHONY J. BLIX, Anaconda, Mont. Filed Mar. 6, 1889. Serial No. 302,077. (No model.)



Claim.—1. The combination, with the belt, of the individual holders or cartridge-carriers, each comprising a hinged recessed flap adapted to open outwardly and downwardly, a corresponding-recessed body-piece and a spring-catch for locking the free end of the hinged plate to the top of the recessed body-piece, substantially as and for the purpose shown and set forth.

2. The combination of the recessed body-piece or back plate, the correspondingly-recessed front plate hinged to the lower end of the recessed back, a spring snap or lock for closing the front plate upon the back, and the spring guard or keeper disposed between the hinged front and fixed back and adapted to guide the cartrides as these slide out of their respective recesses or chambers, substantially as and for the purpose shown and set forth.

404,678. ROOFING-TONGS. CHRISTIAN G. BLUM and PHILIP LISTEMAN, Collinsville, Ill. Filed Aug. 28, 1888. Serial No. 283,983. (Model.)

Claim.—1. In roofing-tongs, the right and left foot-treadles secured to the bending-bar to enable the operator to work it from either the right or left, substantially as and for the purpose set forth.

2. In roofing-tongs, the combination of the angular projections 41 from the end lower corners of the bending-bar and the recesses in the stationary jaw of the tongs which receive said projections, substantially as and for the purpose set forth.

3. In roofing-tongs, the combination of the right and left foot-treadles and the reactionary spring connected to the treadles and the handle of the movable jaw to have a reciprocating movement in unison with both parts with which it connects, substantially as and for the purpose set forth.

4. In roofing-tongs, the combination of the three journal-boxes, each having peripheral bearings for the bending-bar, the three journals of the movable jaw, and the rest-slats secured to the bottom of the bed-plate of the stationary jaw and to the bottom of the movable jaw to raise them above the cross-seams, substantially as and for the purpose set forth.

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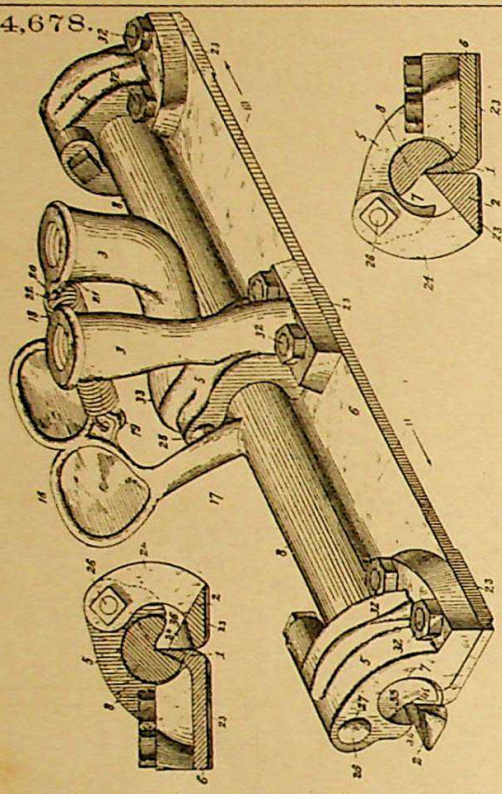

5. In roofing-tongs, the combination of the three journal-boxes having the triple peripheral bearings for the bending-bar and the journals for the movable jaw, and the ogee working-face of the bending-bar which turns the overlap tin in a curve at the apex of the seam and tightly presses its under lip, substantially as and for the purpose set forth.

6. A roofing-tongs comprising a stationary jaw having three journal-boxes, each having a peripheral bearing for a bending-bar and a journal for a movable jaw above and in front of the peripheral bearing, a bending-bar supported in the peripheral bearings, and a movable jaw having a handle-shank and arms 24, pivoted upon the journals of the stationary jaw, substantially as and for the purpose set forth.

404,679. MACHINE FOR CUTTING KEY-SEATS. Thomas W. Broomell, Erie, Pa., assignor of one-half to Frank C. Burton, same place. Filed Nov. 23, 1888. Serial No. 291,715. (No model.)

Claim.—1. The combination, in a key-seating machine, of two parallel screws revolving in opposite directions, and a carriage adapted to be moved longitudinally by said screws with a nut operating in a transverse slot in said carriage, a guide-nut M, and cam mechanism secured to the machine-frame near each end of the nut-guide, adapted to engage with the nut as it leaves the end of said guide and automatically move the nut out of engagement with one of said screws and into engagement with the other, substantially as and for the purpose set forth.

2. The combination, in a key-seating machine, of two parallel screws revolving in opposite directions, and a laterally-moving nut adapted to engage alternately with each of said screws, with an adjustable guide to retain the nut in contact with said screws, and springs adapted to move said nut out of contact with one of said screws after it has passed the guide and into contact with the other screw, substantially as and for the purpose set forth.

3. The combination, in a key-seating machine, of a reciprocating cutter-bar inclosed and traveling in an adjustable semicircular shell with an outer semicircular shell inclosing said inner shell, and adjusting-screws for adjusting said inner shell, substantially as and for the purpose set forth.

4. The combination, in a key-seating machine, of the screws D and D′, geared together so as to run in opposite directions, and a traveling carriage K, operating on ways parallel to said screws, with a reciprocating nut L, operating in a transverse slot in said carriage, and the sectional guide M, for retaining the nut in position during its traverse, substantially as and for the purpose set forth.

5. The combination, in a key-seating machine, of the frame-work A A′ B and the screws D and D′, geared together so as to run in opposite directions, with the reciprocating nut L, operating in the carriage K, between said screws, substantially as and for the purpose set forth.

5. The combination, in a key-seating machine, of the reciprocating nut L, operating between the screws D and D′, and the adjustable guide M, with the springs O and O′, for changing the position of the nut after it has passed the guide M, substantially as and for the purpose set forth.

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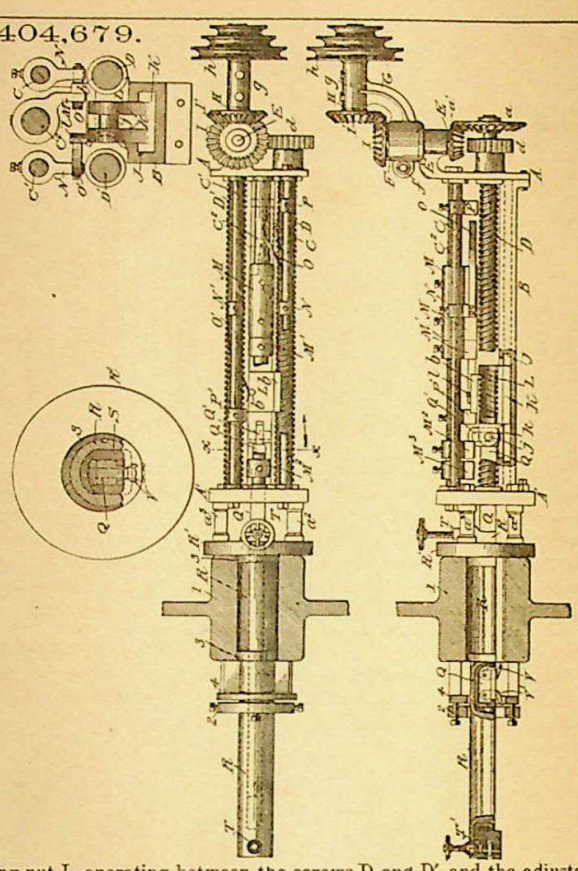
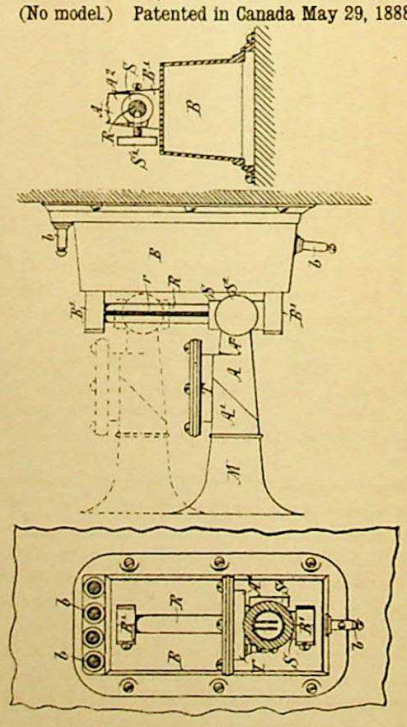


404,680. TELEPHONE-SUPPORT. Charles W. Brown, Montreal, Quebec, Canada, assignor to the Bell Telephone Company of Canada, same place. Filed Mar. 31, 1888. Renewed Feb. 25, 1889. Serial No. 301,135. (No model.) Patented in Canada May 29, 1888, No. 29,234.



Claim.—A telephone-transmitter carried in a cup formed on a casting to which the mouth-piece is attached, said casting having an extension terminating in a sleeve sliding on a vertical rod secured to box containing induction-coil, or to any other suitable base, and means for securing sleeve at desired height, as set forth.

404,681. APPLIANCE FOR SICK-BEDS. George S. Brown, Atlanta, Ga. Filed June 25, 1888. Serial No. 278,156. (No model.)

Claim.—In an apparatus for sick-beds, the combination of the clamp attached to the side rail of the bedstead, the standards D, car-

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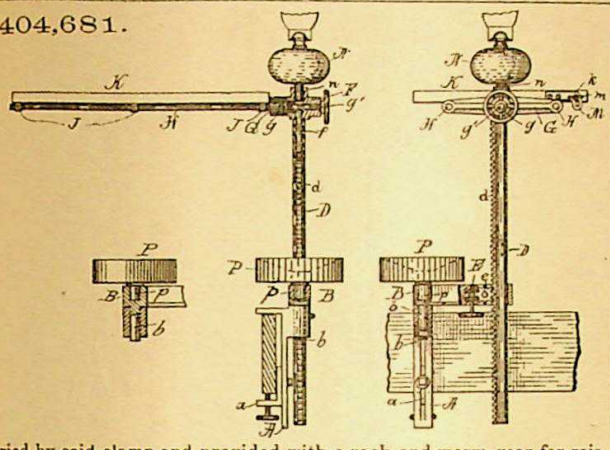
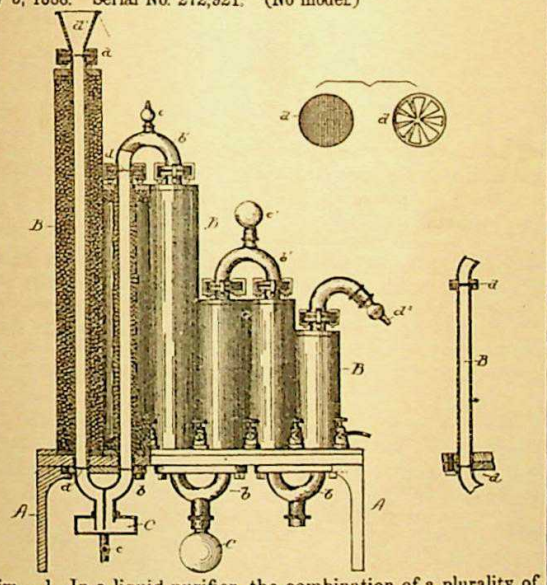


ried by said clamp and provided with a rack and worm gear for raising and lowering the same, the spring-actuated clutch consisting of the arm F, provided with dentations, and the head G, having corresponding dentations, and the stud *g'*, the table K, having a hinged part *k*, the strap M, and screw *m*, for adjusting said hinged part of the table, all arranged to secure said table at any desired inclination, substantially as and for the purpose set forth.

404,682. APPARATUS FOR PURIFYING AND AGING LIQUORS. SAMUEL G. CABELL, Washington, D. C., assignor, by direct and mesne assignments, to the Liquid Purifying Company, of West Virginia. Filed May 5, 1888. Serial No. 272,921. (No model.)



Claim.—1. In a liquid-purifier, the combination of a plurality of vertically-arranged hollow cores or legs connected together by return-couplings and corresponding electro-magnetic coils around said cores, substantially as described.

2. In a liquid-purifier, a conduit consisting of a series of tubular sections of magnetic material and an electro-magnetic helix surrounding said sections, the same being connected at the top by non-magnetic material and at the bottom by magnetic material, substantially as described.

3. In a liquid-purifier, the combination of a hollow core of magnetic material serving as a conduit for the passage of liquid, interposed foraminated diaphragms, and an electro-magnetic helix or coil around said core, substantially as described.

4. In a liquid-purifier, an electro-magnetic conduit having a plurality of coupled tubes and foraminated diaphragms at the joints of the coupling, substantially as described.

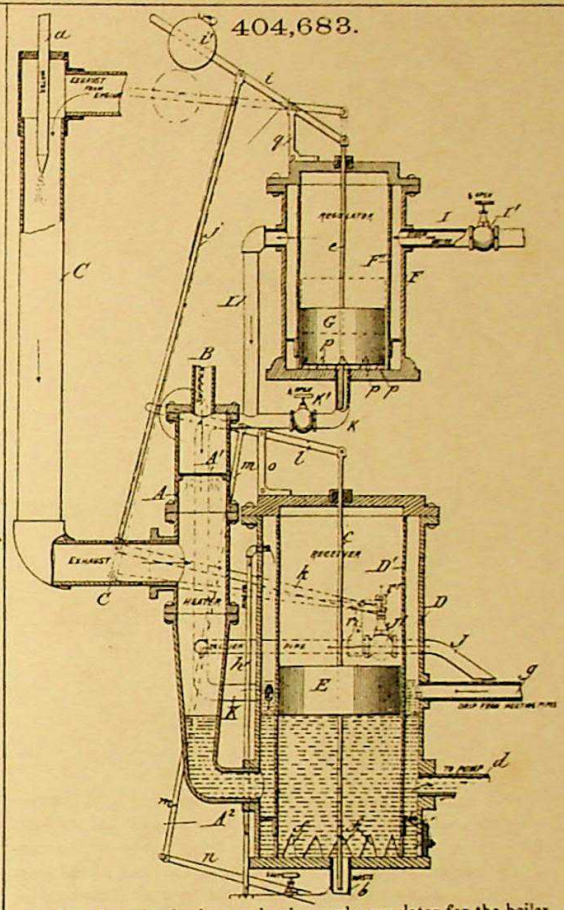
5. In a magnetic purifier, the combination of a series of tubes of magnetic material arranged in pairs, which are connected magnetically at their lower ends and non-magnetically at their upper ends, and a series of electro-magnetic helices corresponding with the cores or tubes, substantially as and for the purposes specified.

6. The combination, with a series of electro-magnetic tubes, of a sediment drum or receptacle located below and connected with said tubes, substantially as and for the purposes specified.

404,683. FEED-WATER HEATER AND REGULATOR. NICHOLAS CLUTE, Schenectady, N. Y. Filed Jan. 23, 1889. Serial No. 297,291. (No model.)

Claim.—1. As an improvement in feed-water heaters, the combination, with the boiler, of the water-receiver having a float con-

404,683.



nected to the valve in the supply-pipe, and a regulator for the boiler connected to the valve in the relief-pipe, substantially as described.

2. The combination, with the water-heating chamber having a transverse perforated diaphragm, of the water-supply pipe entering the upper end thereof, the water-receiver entered by the lower end of the heating-chamber, and a float within the receiver, and connecting mechanism between it and a valve in the supply-pipe, substantially as described.

3. The combination, with the water-heating chamber having a perforated diaphragm, of the water-supply pipe entering the top thereof, the steam-exhaust pipe entering the chamber below the perforated diaphragm, the water-pipe spraying into the exhaust, the receiver entered by the lower end of the heating-chamber, and the float within the receiver connecting by suitable mechanism with a valve in the supply-pipe, substantially as described.

4. The combination, with the water-heater and the water-supply pipe entering it, of the boiler, the water-receiver entered by the lower end of the heater, the float in said receiver, the connecting mechanism between the float and a valve in the supply-pipe, and the regulator for the boiler, substantially as described.

5. The combination of the boiler, its feed, overflow, and relief pipes, the regulator-chamber, a float therein, and connecting mechanism between it and a valve in the relief-pipe, substantially as described.

6. The combination, with the boiler, of the regulator-chamber, an overflow-pipe leading from the boiler to said regulator-chamber, a float within the regulator, the receiver from which the water is conveyed to the boiler, the water-heater connecting with the receiver, the relief-pipe leading from the boiler-feed to the water-heater, and connecting mechanism between the float and a valve in the relief-pipe, substantially as and for the purpose described.

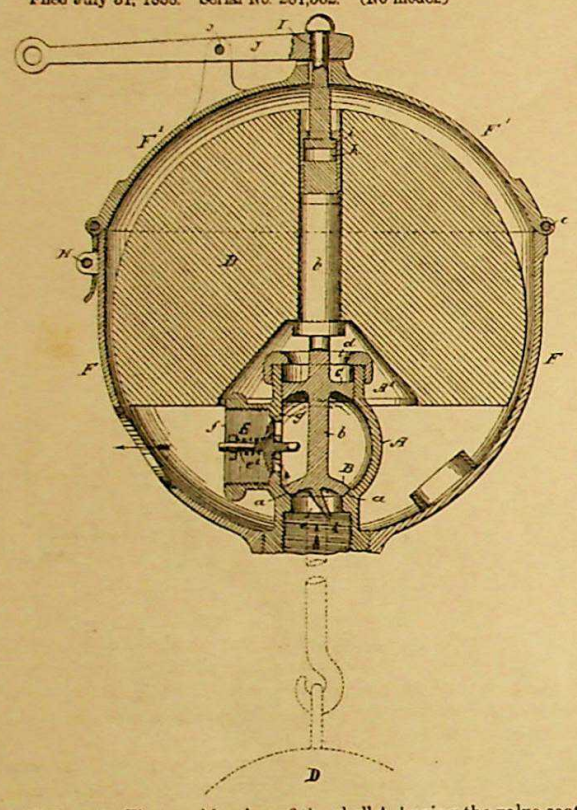
7. The combination of the boiler, its feed, overflow, and relief pipes, the regulator-chamber, the float therein, connecting mechanism between it and a valve in the relief-pipe, the water-heater entered by the relief, a supply-pipe entering the heater, the water-receiver, a float within the receiver, and connecting mechanism between it and a valve in the supply-pipe, substantially as described.

8. The combination of the boiler, the water-receiver, the pump, the pipe leading from the receiver to the pump, and the pipe leading from the pump to the boiler, the water-heater, the water-supply pipe entering the float in the receiver, and the connecting mechanism between the float and a valve in said supply-pipe, substantially as described.

9. The combination of the boiler, the pump, a passage from the pump to the boiler, the water-receiver having a float connected to a

valve in the supply-pipe, a water-passage between the receiver and pump, the regulator for governing the water-level in the boiler, having a float connected to a valve in the relief-pipe, and the water-heater, all arranged and operating substantially as described.

404,684. SAFETY-VALVE. JAMES M. COLVEN, New York, N. Y.
Filed July 31, 1888. Serial No. 281,502. (No model.)



Claim.—1. The combination of the shell A, having the valve-seat *a* at its lower end portion, the cylinder A′ at its upper end portion of a diameter greater than the valve-seat, and the lateral steam-outlet *f*, located at a point between the said cylinder and valve-seat, the solid valve B, having a rigid stem *b*, of less diameter than the valve, the piston C, arranged on the stem and fitting the cylinder, and a weight D, acting on the stem, substantially as described.

2. The combination, with the shell A, of the solid valve B, seated in said shell, the cylinder A′, formed in the shell and having a larger diameter than the valve, the solid piston C, fitted into said cylinder and being rigidly attached to the valve-stem *a*, a weight acting upon the valve-stem, a steam-inlet below the valve B, a steam-outlet which communicates with the shell A between the valve B and the piston C, and a movable check against the escape of steam through the steam-outlet, substantially as shown and described.

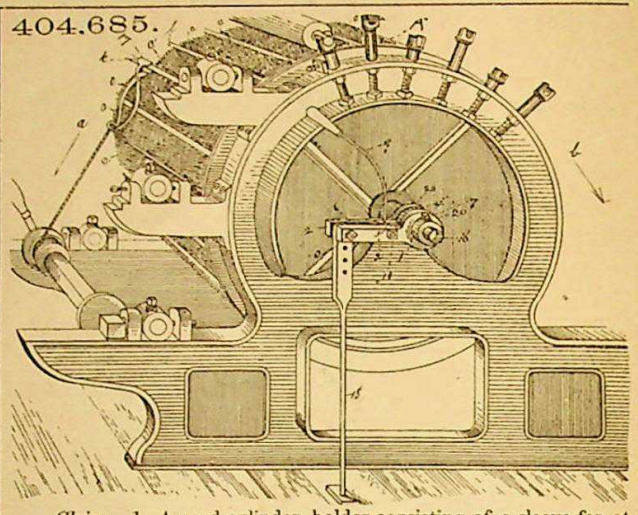
3. The combination, with the valve-shell A, having a valve-seat *a*, a cylinder A′, and a lateral steam-outlet *f*, located between the cylinder and valve-seat, of a solid valve B, the piston C, the lengthwise-movable and axially-revoluble valve-stem *b*, rigidly connecting the valve and piston, and the spiral projection *k* on the valve, substantially as described.

4. The combination of a valve-shell A, the solid valve B, having the rigid valve-stem and the weight D on the stem, of the lock-box F, mounted on the valve-shell, inclosing said shell, stem, and weight, or spring, and a vertical lifting-rod I, extending through the top of the lock-box, and on the lower end of which rod the valve-stem is movable lengthwise, substantially as described.

5. The combination of a valve-shell A, the solid valve B therein, having a rigid valve-stem provided at its upper end with a recess *h*, the weight D on the stem, the lock-box F, inclosing the shell, spring, and stem, the rigid vertical rod I, projecting through the top of the lock-box and having a head *i* at its inner end loosely engaging the recess of the stem, and the pivoted lever J, engaging the upper end of the rigid rod, substantially as described.

6. The combination, with the valve-shell A, having the steam-inlet *e* and lateral steam-outlet *f*, the valve B, the stem *b*, and the weight D on the stem, of the lock-box F, carried by the valve-shell, inclosing said shell, weight or spring, and stem, and provided with orifices in line with the steam inlet and outlet of the valve-shell, substantially as described.

404,685. DEVICE FOR HOLDING CYLINDERS WHILE ATTACHING CARD-CLOTHING THERETO. IRVING E. COMINS, Worcester, Mass.
Filed May 19, 1888. Serial No. 274,444. (No model.)



Claim.—1. A card-cylinder holder consisting of a sleeve for attachment to the shaft of the main cylinder, a collar having a roughened periphery secured to said sleeve, a retaining device for engagement with said collar, a movable support for said retaining device, and means for sustaining said support, all substantially as shown and described.

2. A card-cylinder holder consisting of a sleeve with a collar having a toothed or ratchet periphery attached to said sleeve, a pawl for engagement with said ratchet, a movable support for said pawl, and means for sustaining said support, all substantially as shown and described.

3. A card-cylinder holder consisting of a sleeve for attachment to the shaft of the main cylinder, a collar having a roughened periphery secured to said sleeve, a retaining device for engagement with said collar, a movable support for said retaining device, means for sustaining said support, and a bar for releasing the retaining device from engagement with the collar, all substantially as shown and described.

4. The combination of the sleeve 1, having a collar with a roughened periphery attached thereto, the bars 2, having the rings 20, a retaining device for engagement with said collar, and a support for said bars and retaining device, all substantially as shown and described.

5. The combination of the sleeve 1, having a collar with a roughened periphery attached thereto, the bars 2, having the rings 20, a retaining device for engagement with said collar, a support for said bars and retaining device, and the bar 9, all substantially as shown and described.

6. The combination of the sleeve 1, having a collar with a roughened periphery attached thereto, the bars 2, having the rings 20, a retaining device for engagement with said collar, and the brace 18, all substantially as shown and described.

404,686. GRINDING-MACHINE. RUDOLPH CONRADER, Erie, Pa.
Filed Aug. 13, 1888. Serial No. 282,606. (No model.)

Claim.—1. The combination, in a grinding-machine, of a grinding-carriage supported by and traveling on an oscillating supporting-bed, with a traveling feed-nut, a feed-screw operating said nut, and a flexible connection between said grinder-carriage and said feed-nut, substantially as and for the purpose set forth.

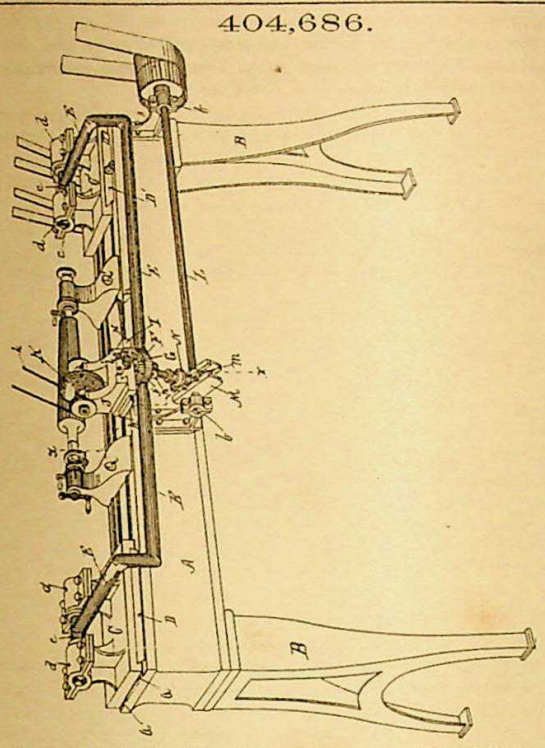
2. The combination, in a grinding-machine, of adjustable head-blocks on the machine-frame, an oscillating bell-crank shaft mounted in said head-blocks, and an adjustable traveling grinder-carriage mounted on said shaft and supported thereby, with a shaft and crank mechanism connecting with and operating said oscillating shaft, substantially as and for the purpose set forth.

3. The combination, in a grinding-machine, of adjustable tail-blocks mounted on ways on the machine-frame and adapted to support work to be ground, with a grinder-frame mounted upon an oscillating bell-crank shaft adapted to be moved in and out to and from the work to be ground, said grinder frame being adapted to travel laterally along said work on an adjustable bed secured to said oscillating bell-crank shaft, substantially as and for the purpose set forth.

4. The combination, in a grinding-machine, of a grinder-carriage traveling on an adjustable bed mounted upon a laterally-adjustable oscillating bell-crank shaft, with a flexible arm connecting said carriage with a feed-nut, and a reversible feed-screw operating said feed-nut, substantially as and for the purpose set forth.

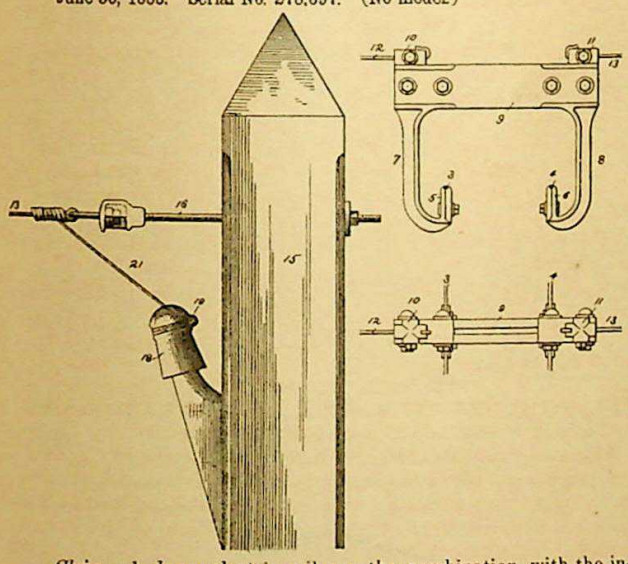
5. The combination, in a grinding-machine, of the heads C C′, adapted to be adjusted across the bed A, and the oscillating bell-crank shaft E, mounted thereon, with the adjustable bed H, mounted on the shaft E, the grinder-carriage J, a rotary grinder K on said carriage J and traveling on said bed H, the crank M, connected to and operating to oscillate the shaft E and the grinder mechanism mounted thereon, and the reversible feed-screw P, nut O, and jointed arm *l e*

404,686.



connecting said nut with the grinder-carriage J, substantially as and for the purpose set forth.

404,687. ELECTRIC RAILROAD. LEO DAFT, Plainfield, N. J. Filed June 30, 1888. Serial No. 278,697. (No model.)



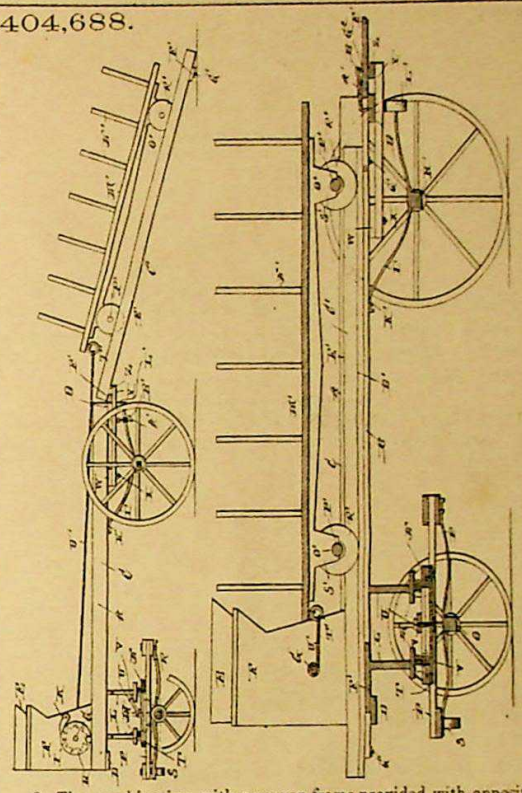
Claim.—1. In an electric railway, the combination, with the insulated plate, of the vise-grips secured thereto and supporting the trolley-conductors, posts arranged along each side of the track supporting the main-current conductors, wire-connectors between the posts and plate serving to support the plate and conduct the main current to the trolley-conductors, and electric connections between the connectors and the main-current conductors, substantially as described.

2. In an electric railway, the combination, with the insulated plate, of the vise-grips supporting the trolley-conductors at their ends, posts arranged along each side the track supporting the main-current conductors, wire-connectors attached to the insulated plates at one end and having their other ends attached to the posts and provided with tension-adjusting devices, and electric connections between the connectors and main-current conductors, substantially as described.

404,688. DRAY. JAMES L. DAVIS, Kimberton, Pa. Filed Mar. 23, 1889. Serial No. 304,399. (No model.)

Claim.—1. The combination, with a wagon-frame provided with opposite tracks, one arranged at each side thereof, of a skid provided with opposite side bars adapted to register in width with the side tracks of the wagon and loosely connected to be collapsed laterally and adapted to be inserted between the side tracks of the wagon, substantially as specified.

404,688.

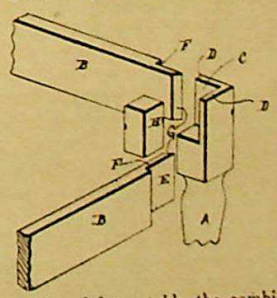


2. The combination, with a wagon-frame provided with opposite side tracks, of a truck mounted for movement thereon, and a laterally collapsible and movable skid designed to fit within the side tracks of the wagon and withdrawn and extended to register with said tracks, substantially as specified.

3. The combination, with the frame A, having the removably-extending bars Y, terminating in the chamfered bar Z, and having the bar D, provided with chain A', terminating in the hook B', of the skid provided with the staple G^2, adapted to engage with the hook and to rest upon the chamfered edge of the bar Z, substantially as specified.

4. The dray having the body provided with the longitudinal track boards or bars B, the bed or body having the supporting wheels or rollers, and the skid or inclined track comprising the side-track boards D', and the cross-bars F', pivotally connected thereto, whereby said skid or inclined track is adapted to be collapsed, substantially as described.

404,689. TABLE. JAMES M. DAVIS, Hudnut, Ind., assignor of one-half to Silas Taylor, same place. Filed Feb. 2, 1889. Serial No. 298,422. (No model.)



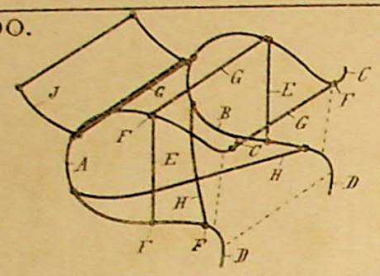
Claim.—1. In a knockdown table, the combination of the leg flanged at its upper end along its outer sides, a clamping-block seated in the recess thus formed, a screw or bolt passing diagonally through said block and through the corner of the flanges, and the frame-sides having mitered ends abutting against each other, substantially as herein set forth.

2. The combination of the table-leg having a rectangular recess at its upper end forming flanges D, the frame-sides B, having recesses E, forming shoulders F, and beveled or mitered ends, the clamping-blocks H, and screws or bolts I, substantially as and for the purpose set forth.

404,690. ATTACHMENT FOR LAWN-MOWERS. FRANK A. DELAND, Memphis, Mich. Filed Sept. 26, 1888. Serial No. 286,455. (No model.)

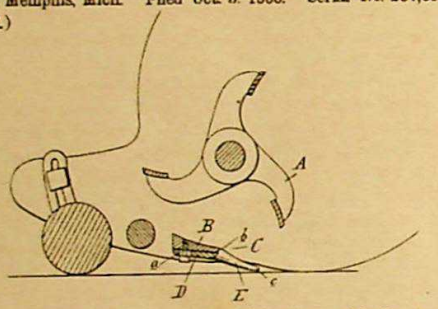
Claim.—1. An attachment to lawn-mowers, consisting of a receptacle made of a skeleton frame of spring-wire bent to form a contracted mouth, and said wire having projecting ends to engage parts of the mower to hold said frame thereto, and a fabric covering said frame, substantially as described.

404,690.



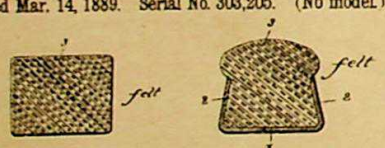
2. An attachment to lawn-mowers, consisting of a flexible receptacle made of a skeleton spring-wire frame formed of the loops A and B, connected by transverse and diagonal bars, substantially as described, and with the projecting ends C and D, and of an outer covering of fabric, substantially as and for the purpose described.

404,691. ATTACHMENT FOR LAWN-MOWERS. Frank A. Deland, Memphis, Mich. Filed Oct. 3, 1888. Serial No. 287,057. (No model.)



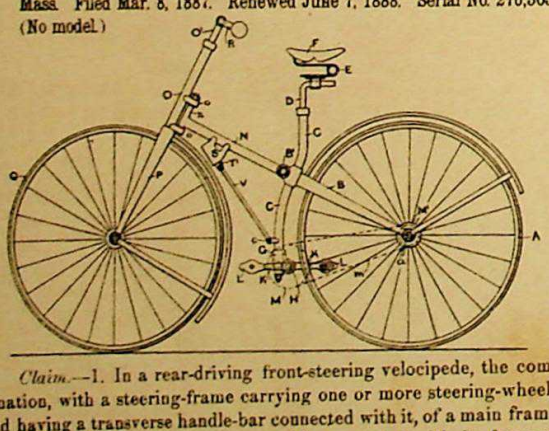
Claim.—In a lawn-mower, the combination, with the stationary knife-bar thereof, of a comb integrally cast in one piece, provided with a flat body D, having suitable means of attachment to said knife-bar, and provided with the tapering and forwardly-projecting teeth E, the upper faces of which are flush with the upper surface of the knife-bar at their rear ends, forming shoulders *b*, and inclined downwardly and forwardly therefrom, substantially as described.

404,692. WHEEL-TIRE. Rudolph W. Donmoyer, South Bend Ind. Filed Mar. 14, 1889. Serial No. 303,205. (No model.)



Claim.—A wheel rim or felly provided with a tire of felt, as and for the purposes set forth.

404,693. VELOCIPEDE. Alfred Easthope, Wolverhampton, County of Stafford, England, assignor to Albert H. Overman, Boston, Mass. Filed Mar. 8, 1887. Renewed June 7, 1888. Serial No. 276,305. (No model.)



Claim.—1. In a rear-driving front-steering velocipede, the combination, with a steering-frame carrying one or more steering-wheels and having a transverse handle-bar connected with it, of a main frame having the said steering-frame movably connected with its forward end, carrying one or more driving-wheels, having a seat-support and a crank-shaft support and provided with a vertically-acting hinge, and an elastic connection joining parts of the main frame on opposite sides of the hinge, whereby the frame cushions vertically, substantially as set forth.

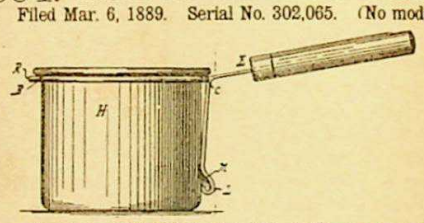
2. In a rear-driving front-steering velocipede, the combination, with a steering-frame carrying one or more steering-wheels and having a transverse handle-bar connected with it, of a main frame having the said steering-frame movably connected with its forward end, carrying one or more driving-wheels, having a seat-support and a crank-shaft support and provided with a vertically-acting hinge, and an elastic connection joining parts of the main frame on opposite sides of the hinge, whereby the frame cushions vertically, the said seat-support, crank-shaft support, and hinge being located in virtually the same vertical line, substantially as set forth.

3. In a velocipede, the combination, with a steering-frame carrying one or more steering-wheels and having a transverse handle-bar connected with it, of a main frame having the steering-frame movably connected with its forward end, carrying one or more driving-wheels and provided with a seat-support, a crank-shaft support, and with a vertically-acting hinge, and an elastic connection joining the forward part of the said main frame with the crank-shaft support which is on the opposite side of the hinge therefrom, substantially as set forth.

4. In a velocipede, the combination, with a steering-frame carrying one or more steering-wheels and having a transverse handle-bar connected with it, of a main frame having the said steering-frame movably connected with its forward end, carrying one or more driving-wheels and provided with an upright seat-support and a depending crank-shaft support, substantially as shown, and with a vertically-acting hinge, and an elastic connection joining parts of the frame on opposite sides of the said hinge, whereby the same has a cushioning action, substantially as set forth.

5. In a velocipede, the combination, with a main frame having a vertically-acting hinge, of a tie connecting parts of such frame on opposite sides of the said hinge, and consisting, essentially, of a rod, a spring located at one end thereof, and a box inclosing such spring, substantially as set forth.

404,694. HOLDER FOR VESSELS. John P. Eustis, New York, N. Y. Filed Mar. 6, 1889. Serial No. 302,065. (No model.)

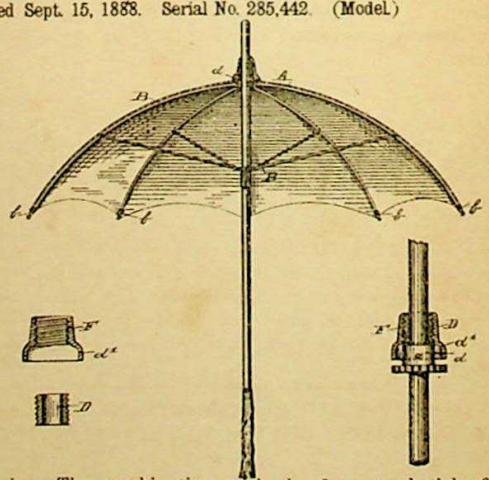


Claim.—1. A vessel-holder consisting of an expansible and contractible spring-clamp, a handle, and a hooked catch connected with the handle, for steadying the bottom of the vessel, said clamp and handle joined by a hinge which permits the clamp to move to and fro, substantially as described.

2. A vessel-holder consisting of the catch for steadying the bottom of the vessel, the handle connected with the catch, and the expansible spring-clamp connected with the handle for encircling the top part of the vessel, substantially as described.

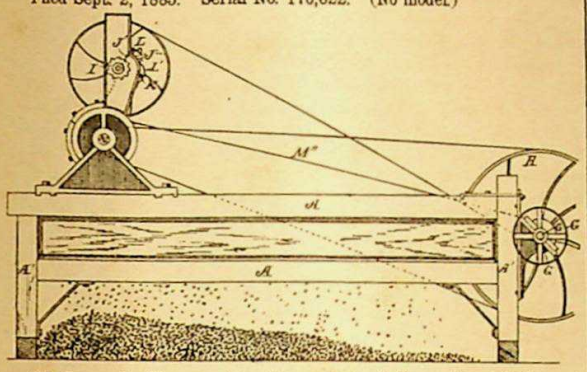
3. A vessel-holder consisting of a catch for steadying the bottom of the vessel, the handle connected with the catch, and the ring-clamp connected with the handle for encircling the top part of the vessel, said ring-clamp being provided with supporting-lugs R, substantially as described.

404,695. UMBRELLA OR PARASOL. French S. Evans, Washington, D. C., assignor of one-fourth to Aldis D. Browne, same place. Filed Sept. 15, 1888. Serial No. 285,442. (Model.)



Claim.—The combination, with the frame and stick of an umbrella or parasol of ordinary form, of a removable cover, made of textile or other suitable material, provided with socketed tips in correspondence with the ribs of the frame, an externally-screw-threaded sleeve removably attached to said stick, and an internally-screw-threaded flaring or bell-mouthed cap to connect with said sleeve and the notch of the frame for the purpose of securing the cover in place, constructed and arranged substantially as and for the purpose described.

404,696. COTTON-SEED HULLER. WILLIAM R. FEE, Cincinnati, and JAMES S. ZERBE, Hartwell, Ohio, assignors, by mesne assignments, to the National Cotton Seed Oil and Huller Company, Memphis, Tenn. Filed Sept. 2, 1885. Serial No. 176,022. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, in a cotton-seed huller, of the hopper, the fluted feed-roll mounted to revolve therein, a hinged gate having a flange projecting inward in the direction of and above the feed-roll, and a set-screw for adjusting said flange with relation to the feed-roll, so as to regulate the feed from the hopper.

2. The conveyer-shaft C, having its ends convexed, in combination with gudgeons D, having concaved seats and provided with tapering bores, and adjusting-rods for adjustably securing said gudgeons to the end of the shaft, substantially as set forth.

3. The hollow cylinder N, cast in one piece, having ribs S, and curved depressions between said ribs and shoulders or offsets T, forming cutting-edges upon said ribs, substantially as set forth.

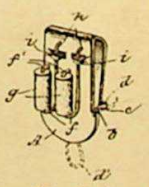
4. A concave V for cotton-seed hullers, substantially as hereinbefore set forth, having zigzag ribs W, arranged in pairs, as shown, the ribs of each pair being parallel with each other and the ribs of each pair being arranged at an angle to the ribs of the adjacent pair.

5. The combination, substantially as specified, in a cotton-seed huller, of the hollow hulling-cylinder having longitudinal ribs S and the concave V, having zigzag ribs arranged in pairs, as shown, the line of the ribs of each pair being parallel to each other and at an angle to the line of the pair adjacent.

6. The combination, substantially as specified, of the reversible hulling-cylinder having ribs S, intervening depressions S', and shoulders T, forming edges upon each side of the ribs, and the concave V, having zigzag ribs W.

7. In a cotton-seed huller, the combination, substantially as specified, of the frame A A', the separator consisting of the perforated screen B and separator-shaft within it mounted in said frame, the huller consisting of the hulling-cylinder and its concave mounted upon said separator, the hopper and its fluted feed-roll mounted upon the huller, and suitable means, such as shown, to transmit power from the same shaft to the feed-roll, huller, and separator.

404,697. SPRING HOLDER OR CLASP FOR PENS OR PENCILS. FREDERICK J. W. FISCHER, New York, N. Y., assignor to the Eagle Pencil Company, same place. Filed Mar. 22, 1889. Serial No. 304,288. (No model.)



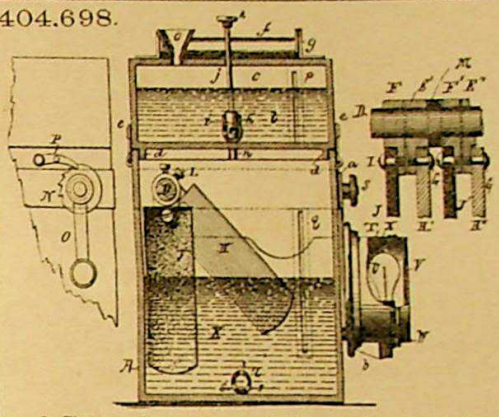
Claim.—The combination, with the base or supporting plate of the clasp, of spring wires or shanks secured at one end thereto, and at their free ends bent over upon themselves to form roll-supports, and rolls, of rubber or other suitable material, mounted on said supports, these parts being constructed and arranged for the purposes hereinbefore set forth.

404,698. PORTABLE ELECTRIC LANTERN. WILLIAM FRISHMUTH, Philadelphia, Pa. Filed Nov. 8, 1888. Serial No. 290,322. (No model.)

Claim.—1. The combination, in a galvanic cell, of a containing-vessel, a rock-shaft extending across the same, an electrode rigidly secured at its upper portion to said shaft, and an electrode loosely secured to said shaft, the said shaft freely rotating in said last-mentioned electrode and carrying said first-mentioned electrode with it during its movement of rotation, substantially as described.

2. The combination, in a galvanic cell, of the vessel A, rock-shaft D, electrodes H' J', and rings E' F', supporting said electrodes, substantially as described.

404.698.



3. The combination, in a galvanic cell, of the vessel A, rock-shaft D, of insulating material, electrodes H' J', rings E' F', supporting said electrodes, and interposed ring M, of insulating material, substantially as described.

4. In a galvanic cell, the combination of a vessel containing the electrodes and electrolyte, a closed chamber or compartment detachably supported upon and hermetically closing the said vessel, and a valve in the lower part of said chamber, the said chamber being adapted to contain a supply of electrolytic liquid, and the said valve being disposed so as to govern the escape of said liquid from said chamber into said vessel, substantially as described.

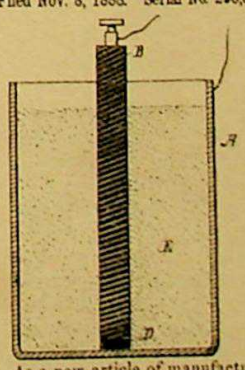
5. In combination with the vessel A, containing the elements of a galvanic cell and provided with the slot *q*, covered with transparent material, of the closed chamber *c*, supported upon and hermetically closing said vessel and provided with the slot *p*, covered with transparent material, a valve arranged in the bottom of said chamber and operating to govern the escape of liquid from said chamber, and a means of operating said valve outside of said chamber, substantially as described.

6. The combination of a containing-vessel divided into compartments, as B B', a rock-shaft D, extending across said compartments, a pair of electrodes, as J H J' H', in each of said compartments, a series of conducting-rings, as E F E' F', upon said shaft and supporting said electrodes, the rings, as F E', supporting the positive and negative electrodes, respectively, of adjacent compartments being in electrical contact, and the rings, as E F', supporting the positive and negative electrodes in the same compartment being insulated from each other, substantially as described.

7. The combination of the vessel A, containing the elements of a galvanic cell, plates R R' upon the exterior of said vessel and respectively electrically connected to the electrodes of said cell, an incandescing electric lamp and support T therefor, and means, such as clamping-screws S S', for detachably connecting said support to said plates R R', substantially as described.

8. The combination, with the vessel A, containing the elements of a galvanic cell, circuit-connections, and clamping devices, such as screws S S', of the cylinder T, circuit-connection, and lamp U therein substantially as described.

404,699. GALVANIC BATTERY. WILLIAM FRISHMUTH, Philadelphia, Pa. Filed Nov. 8, 1888. Serial No. 290,323. (No model.)



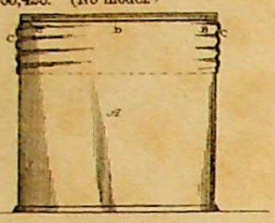
Claim.—1. As a new article of manufacture, a non-conducting porous insoluble refractory solid in dry comminuted form, containing in its pores a substance or substances capable of acting as a depolarizer in a galvanic cell, substantially as described.

2. As a new article of manufacture, pumice-stone in dry comminuted form, containing in its pores a substance or substances capable of acting as a depolarizer in a galvanic cell, substantially as described.

3. As a new article of manufacture, pumice-stone in dry comminuted form, containing in its pores bichromate of potash, substantially as described.

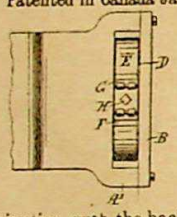
4. In combination with the electrodes of a galvanic cell, a mass of pumice-stone in comminuted form interposed between said electrodes, containing in its pores a depolarizing substance, and saturated with an electrolytic solvent of said substance, substantially as described.

404,700. PACKING FOR METALLIC BOXES. HENRY R. GILLINGHAM, Baltimore, Md., assignor to M. C. Cook, same place. Filed Mar. 15, 1889. Serial No. 303,428. (No model.)



Claim.—A packing for cans provided with screw-covers, and for other vessels of capacity, composed of comminuted cork saturated with linseed-oil and provided with a backing of canvas, substantially as shown.

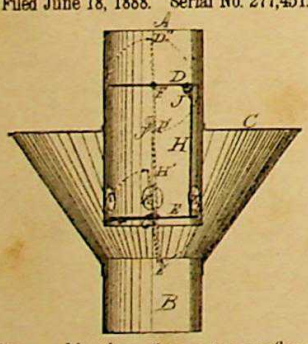
404,701. DUST-GUARD FOR CAR-AXLE BOXES. LOUIS GOULLIOUD, Montreal, Quebec, Canada, assignor to the Union Bearing and Lubricator Company, Portland, Me. Filed Jan. 4, 1889. Serial No. 295,478. (No model.) Patented in Canada Jan. 31, 1889, No. 30,680.



Claim.—1. The combination, with the back plate of an axle-box, of a supplementary plate secured thereto, leaving space between them, the inner faces of both plates being trued up, a cork disk mounted on the axle, and a band partially surrounding the periphery of the disk and provided with a device for tightening it up on same, all substantially as herein set forth.

2. The combination, with the back plate A of an axle-box, of the plate B, secured to same, single cork disk D, mounted on axle between plates, strap E, encircling such disk, plates F and G, and set-screw H, all substantially as herein described.

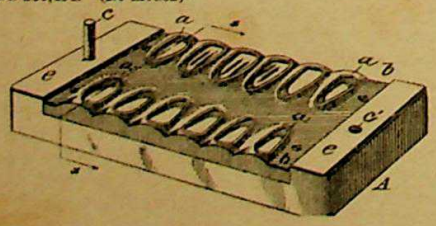
404,702. FUEL-SAVING DEVICE. ARTHUR C. GREENLEE, Fergus Falls, Minn. Filed June 18, 1888. Serial No. 277,451. (No model.)

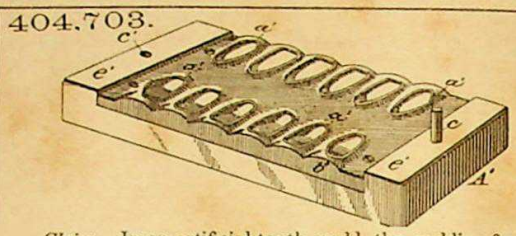


Claim.—1. The combination of an entrance-flue B, a radiating-chamber C, escape-flue A, with openings K from radiating-chamber, primary damper D, hung on shaft F, joint J, connecting-rod H, secondary damper E, hung on shaft G, counterpoised on side N, and stops O, all substantially as described.

2. The combination of an escape-flue having lateral openings near one end, a radiating-chamber surrounding the laterally-open portion of the said flue, dampers arranged in the flue above and below the lateral openings, respectively, and a rod connecting the said dampers, whereby both may be operated together, substantially as specified.

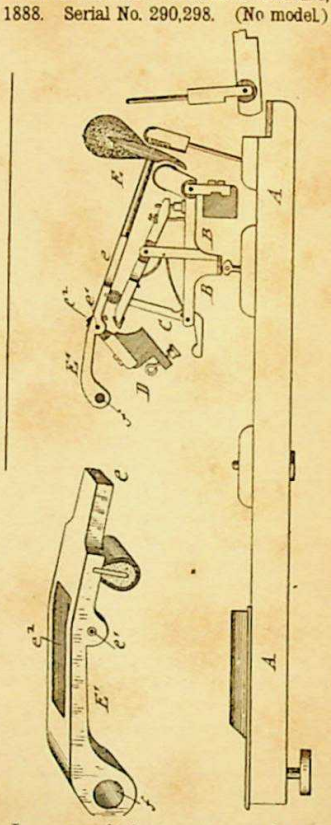
404,703. MOLD FOR THE MANUFACTURE OF ARTIFICIAL TEETH. WILLIAM R. HALL, Philadelphia, Pa. Filed Oct. 29, 1888. Serial No. 289,431. (No model.)





Claim.—In an artificial-tooth mold, the molding-frame A A′, in combination with the mold-shells *a a′*, the backing-plate *b*, in which the mold-shells are set, the frame provided with the pins *c c*, and the orifices *c′ c′*, substantially as hereinbefore set forth and described.

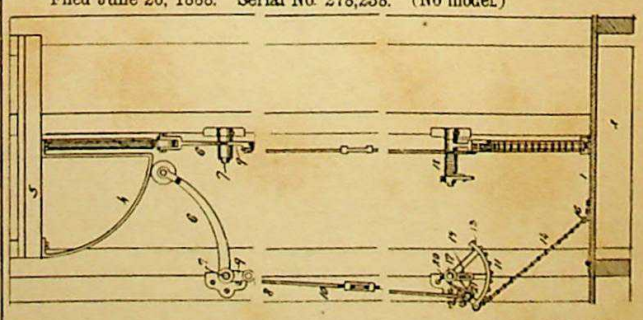
404,704. PIANO-ACTION. SIEGFRIED HANSING, New York, N. Y. Filed Nov. 8, 1888. Serial No. 290,298. (No model.)



Claim.—1. In a grand-piano action, a hammer the shank of which is extended beyond the pivot and provided with a perforated enlargement or eye at the rear end, substantially as set forth.

2. In a grand-piano action, a hammer the shank of which is extended beyond the pivot of the hammer-pivot, the extension being provided with a slotted opening and with a perforated enlargement or eye at the rear end, substantially as set forth.

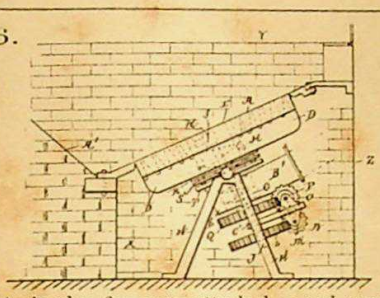
404,705. SELF-CLOSING HATCHWAY. EMIL J. HERMAN, St. Louis, Mo., assignor to the Safety Hatch-Door Company, same place. Filed June 26, 1888. Serial No. 278,238. (No model.)



Claim.—In a self-closing hatchway, the combination of the door, segment, chain 14, connecting the door to the segment, rod 10, lever 6, and spring 18, having arm 21, against which the segment bears when the door has nearly reached its closed position and not until then, substantially as and for the purpose set forth.

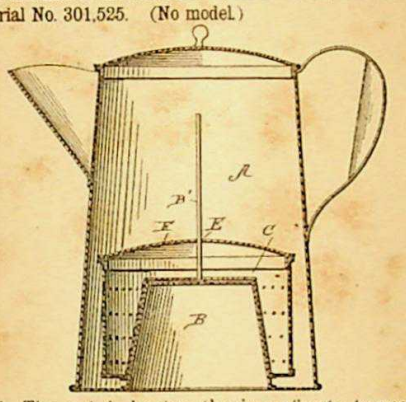
404,706. SELF-FEEDING FURNACE-GRATE. LEWIS HOPCRAFT Stamford Hill, County of Middlesex, England. Filed Mar. 20, 1889. Serial No. 303,967. (No model.) Patented in England Nov. 22, 1886, No. 15,135.

404,706.



Claim.—A circular fire-grate attached to and combined with a central tube containing a worm, which grate and tube can be made to revolve in one direction while the worm is made to revolve in the opposite direction for the purpose of feeding fuel to the furnace and distributing it over the grate, the whole combination being capable of being tilted and worked at any desired angle.

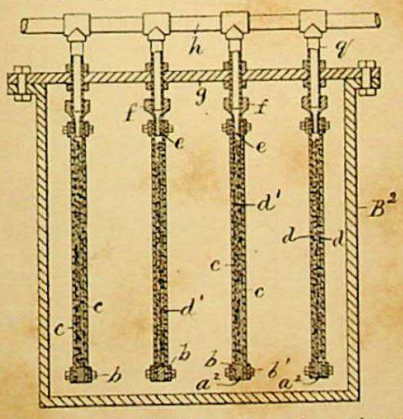
404,707. COFFEE-POT. FRANK A. HOVEY, Farmington Falls, assignor of one-half to Herbert Elwell, East Wilton, Me. Filed Feb. 28, 1889. Serial No. 301,525. (No model.)



Claim.—1. The pot A, having the imperforate truncated-cone-shaped concavity B, in combination with the perforated receiving-cylinder having its bottom concaved to fit the bottom B, substantially as specified.

2. The combination of the coffee-pot provided with a concave bottom, the perforated receiver provided with a concave bottom fitting around the concave bottom of the pot, the lid on the receiver, and the vertical rod or handle affixed at its lower end to the center of the bottom of the receiver and passing through a central opening in the lid thereof, substantially as and for the purpose specified.

404,708. APPARATUS FOR FILTERING. JOHN W. HYATT, Newark, N. J. Filed Oct. 11, 1888. Serial No. 287,852. (No model.)

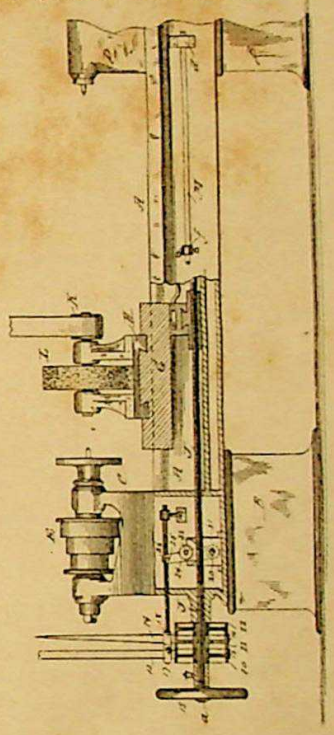


Claim.—1. The combination, in a filter, of a series of sheets of filtering material clamped together in pairs, with intervening packings between the pairs at their peripheries, heads pressed upon the entire series at its opposite ends, a discharge-pipe, a series of outlet-apertures formed through all the pairs of sheets and connected together and to the discharge-pipe by intermediate packings, and a series of openings formed through all the pairs to distribute the inlet-fluid between the same as an inlet, as and for the purpose set forth.

2. The combination, in a filter, of a series of sheets of filtering material clamped together in pairs, with intervening packings between the pairs at their peripheries, heads pressed upon the entire series at its opposite ends, a discharge-pipe, loose abrading material inserted in the separate spaces between the pairs, a series of outlet-apertures formed through all the pairs of sheets and connected together and to the discharge-pipe by intermediate packings, an outlet, and a series of openings formed through all the pairs of sheets to distribute the inlet-fluid between the same, as and for the purpose set forth.

3. A filter consisting in a series of pairs of flexible sheets and provided with an outlet-aperture, and a plate of metal having granular material cemented thereto being inserted between the sheets of each pair, as and for the purpose set forth.

404,709. DRIVING AND BELT-SHIFTING MECHANISM. ELWIN R. HYDE, Springfield, Mass. Filed Feb. 1, 1888. Serial No. 262,608. (No model.)



Claim.—1. In combination, a bed having slideways, a carriage capable of a reciprocatory movement thereon, a feed-screw shaft engaging said carriage, provided with loose and fixed pulleys 10, 12, and 11 and having a fixed momentum-wheel 15, the reversely-speeded belts 13 and 14, and a belt-shifter engaging said belts, substantially as described.

2. The combination, with a reciprocating carriage and a suitably-journaled feed-screw engaging therewith, having loose and fixed pulleys 10, 12, and 11 and a balance-wheel, of a belt-shifter shaft engaging said belts, a horizontal transverse shaft 20, provided with a crank-arm 24, engaging said belt-shifter shaft and having the arrow-head 28, and an independent spring-actuated arrow-head 30, substantially as and for the purpose described.

3. The combination, with a suitably-journaled feeding-screw shaft J, provided with a gear, and a reciprocating bed engaging said shaft J, a rotable shaft having a gear meshing with said feed-screw gear and having mounted thereon loose and fixed pulleys 10, 12, and 11, and reversely-speeded belts 13 and 14, of a belt-shifter shaft engaging said belts, a horizontal transverse rotatable shaft 20, provided with a crank-arm 24, engaging said belt-shifter shaft, which has the arrow-head 28, and an independent spring-actuated arrow-head 30, substantially as and for the purpose described.

4. The combination, with a suitably-journaled feeding-screw shaft J, provided with a gear, and a reciprocating bed engaging said shaft J, a rotatable shaft having a gear meshing with said feed-screw gear and having mounted thereon loose and fixed pulleys 10, 12, and 11 and a balance-wheel, and reversely-speeded belts 13 14, of a belt-shifter shaft engaging said belts, and a transverse rotatable shaft 20, provided with a crank-arm 24, engaging said belt-shifter shaft, substantially as and for the purpose described.

5. The combination, with a suitably-journaled feeding-screw shaft J, provided with a gear, and a reciprocating bed engaging said shaft J, a rotatable shaft having a gear meshing with said feed-screw gear and having mounted thereon loose and fixed pulleys 10, 12, and 11 and a balance-wheel, and reversely-speeded belts 13 14, of a belt-shifter shaft engaging said belts, a transverse rotatable shaft 20, provided with a crank-arm 24, engaging said belt-shifter shaft, and having the arrow-head 28, and an independent spring-actuated arrow head 30 substantially as and for the purpose described.

6. The combination, with a bed or frame, a suitably-journaled feeding-screw shaft J, provided with a gear, and a carriage engaging said feed-screw shaft and adapted to travel along said bed, the shaft M, provided with the dogs *f f*, a rotatable shaft having a gear mesh-

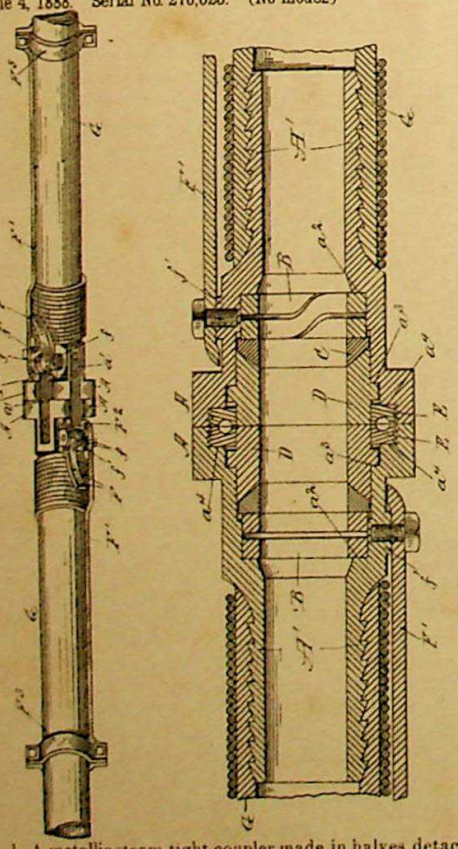
ing with said feed-screw gear and having mounted thereon loose and fixed pulleys 10, 12, and 11, and reversely-speeded belts 13 14, of a belt-shifter shaft engaging said belts, a horizontal transverse shaft 20, provided with a crank-arm 21, engaging said dog-shaft M, and a crank-arm 24, engaging said belt-shifter shaft, which has the arrow-head 28, and an independent spring-actuated arrow-head 30, substantially as and for the purpose described.

7. The combination, with a bed or frame, a suitably-journaled feeding-screw shaft J, provided with a gear, and a carriage engaging said feed-screw shaft and adapted to travel along said bed, the shaft M, provided with the dogs *f f*, a rotatable shaft having a gear meshing with said feed-screw gear and having mounted thereon loose and fixed pulleys 10, 12, and 11 and the balance-wheel 15, and the reversely-speeded belts 13 14, of a belt-shifter shaft engaging said belts, a horizontal transverse shaft 20, provided with a crank-arm 21, engaging said dog-shaft M, and a crank-arm 24, engaging said belt-shifter shaft, which has the arrow-head 28, and an independent spring-actuated arrow-head 30, substantially as and for the purpose described.

8. The combination, with a bed or frame, a suitably-journaled feeding-screw shaft J, provided with a gear, and a carriage engaging said feed-screw shaft and adapted to travel along said bed, the shaft M, provided with the dogs *f f*, and the adjustable collar 23, having lug 22, a rotatable shaft having a gear meshing with said feed-screw gear and having mounted thereon loose and fixed pulleys 10, 12, and 11 and the balance-wheel 15, and the reversely-speeded belts 13 14, of a belt-shifter shaft 16, engaging said belts provided with the adjustable collar 27, having lug 26, a horizontal transverse shaft 20, provided with a slotted crank-arm 21, engaging said lug 22, and a slotted crank-arm 24, engaging said lug 26, provided with the arrow-head 28, and an independent spring-actuated arrow-head 30, substantially as and for the purpose described.

9. The combination, with a bed or frame, a suitably-journaled feeding-screw shaft J, provided with a gear, and a carriage engaging said feed-screw shaft and adapted to travel along said bed, the shaft M, provided with the adjustable dogs *f f*, a rotatable shaft having a gear meshing with said feed-screw gear and having mounted thereon loose and fixed pulleys 10, 12, and 11 and the balance-wheel 15, and the reversely-speeded belts 13 14, of a belt-shifter shaft 16, having belt-shifting hooks 17 18, and the supplemental parallel guiding-shaft 19, a horizontal transverse shaft 20, provided with a crank-arm 21, engaging said dog-shaft M, and a crank-arm 24, engaging said belt-shifter shaft, the latter having the arrow-head 28, and an independent spring-actuated arrow-head 30, substantially as and for the purpose described.

404,710. STEAM-TIGHT COUPLER. THOMAS M. JENKS, Chicago, Ill., assignor to the Jenks Railway Car Signal Company, same place. Filed June 4, 1888. Serial No. 276,025. (No model.)



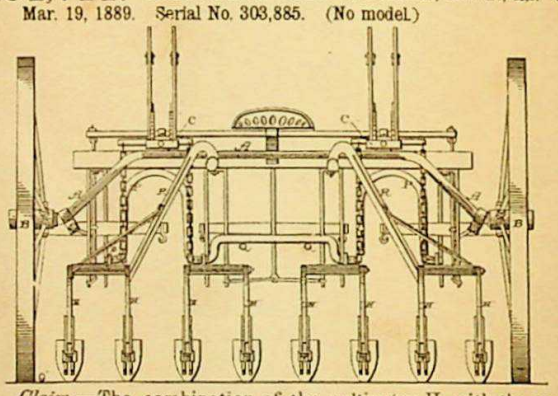
Claim.—1. A metallic steam-tight coupler made in halves detachable from each other, having a central hole for the passage of steam, corrugated stems to be inserted and secured in flexible hose, two annular composition packings of expansible material in the central hole meeting at the section of the coupler and making a tight joint, and flat zinc rings at the opposite ends of the packings, substantially as stated.

2. In a metallic steam tight coupler, the two similar parts A A, united by a hinge and clasps and detachable from each other, and having a continuous hole provided in the respective parts with the shoulders a^2, a^3, and a^4, in combination, in its respective parts, with the spiral spring B, resting against the shoulder a^2, the zinc expansion-ring C, resting against said spring, the composition annular packing D, having an external circular ledge resting against the shoulder a^3, and the retaining-ring E, externally screw-threaded and screwed into internal screw-threading in the coupler until it rests against the shoulder a^4, substantially as and for the purposes specified.

3. In a metallic steam-tight coupler, substantially as described, the lever F, pivoted between the lugs *f*, formed on a side of the coupler near its central section and having the end of its short arm under the clasp *a'*, in combination with the lever F', pivoted on the lug *f'*, formed on the coupler immediately below the lug *f*, having its short arm curved upward and passed beneath the short arm of the lever F, and its long arm, near its end, curved under and about the hose G, secured on a stem of said coupler, as and for the purpose stated.

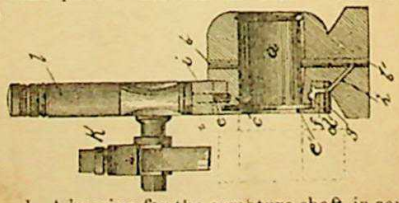
4. In a metallic steam-tight coupler, substantially as described, the combination of the clasps *a'*, secured to and holding together the respective halves of said coupler, and the levers F F, pivoted between the lugs *f f*, formed on the respective halves of said coupler and having their long arms curved upward and the end of their short arms under the ends of said clasps, as and for the purpose stated.

404,711. CULTIVATOR. JAMES W. JOHNSON, La Due, Mo. Filed Mar. 19, 1889. Serial No. 303,885. (No model.)



Claim.—The combination of the cultivator H, with the sockets N secured thereto, the castings placed upon the sockets, and the connecting-rods P Q, for connecting the cultivators together, substantially as described.

404,712. DETACHABLE BRUSH-HOLDER FOR DYNAMOS. JESSE F. KESTER, Terre Haute, Ind., assignor of three-fourths to Joseph H. Briggs, same place. Filed Oct. 29, 1888. Serial No. 289,408. (No model.)



Claim.—1. A bearing for the armature-shaft, in combination with a collar loosely mounted upon the same and provided with an inwardly-extending annular flange surrounding the armature-shaft and forming an annular space between itself and the edge of the bearing, and having a transverse aperture through the lower portion of the collar in communication with the space, and a brush-holder support carried by the collar, substantially as described.

2. In a dynamo or motor, an armature-shaft bearing having a reduced portion around its inner end, in combination with a collar loosely mounted upon the reduced portion and provided with an inwardly-extending annular flange embracing the armature-shaft a distance from the edge of the reduced portion, and a brush-holder carried by the collar, substantially as described.

3. In a dynamo or motor, the combination, with a journal-box for the armature-shaft, of a collar loosely and adjustably mounted on the same, a brush-holder support detachably secured to the collar, and a handle provided with a screw extending through the support and collar, substantially as described.

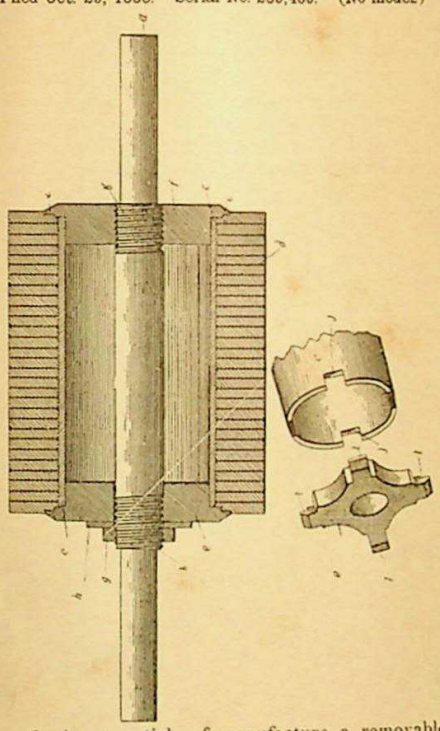
4. An armature-shaft bearing, in combination with a collar loosely embracing the same, a brush-holder support partially embracing the

collar and removably secured to the same, and a handle to adjustably clamp the parts in position, substantially as described.

5. In a dynamo or motor, the combination of a shaft-bearing, a collar embracing and adjustable around the same, and provided with an inwardly-extending annular flange at the inner edge of the bearing and surrounding the shaft, a brush-holder support carried by the collar, and a handle provided with a screw-stud to extend through the collar and engage the bearing, substantially as described.

6. In a dynamo or motor, the combination, with an armature-shaft bearing, of a collar embracing and adjustable around the same, a brush-holder support provided with a recess in its under side fitting upon the upper side of the collar, set-screws securing the support to the collar, and a handle to adjustably clamp the collar to the bearing, substantially as described.

404,713. ARMATURE-CORE FOR DYNAMOS. JESSE F. KESTER, Terre Haute, Ind., assignor of three-fourths to Joseph H. Briggs, same place. Filed Oct. 29, 1888. Serial No. 289,409. (No model.)



Claim.—1. As an article of manufacture, a removable interchangeable armature for dynamo-electric machines or motors, comprising a cylinder open at the ends, a series of rings embracing and clamped together upon the periphery of the cylinder, and end pieces provided with aligned central openings to removably receive the armature-shaft, and with radial arms engaging the ends of the cylinder, substantially as described.

2. In a dynamo or motor, the combination, with the armature-shaft having screw-threads, of an armature having a hollow core open at the ends removably located on the shaft, end pieces for the same provided with radial arms removably engaging the armature to hold the same to the shaft, and with central apertures to receive the shaft, one of said apertures being screw-threaded to screw upon the shaft and the other aperture of a size to slip over the screw-threads, and a nut on the shaft to hold the loose end piece.

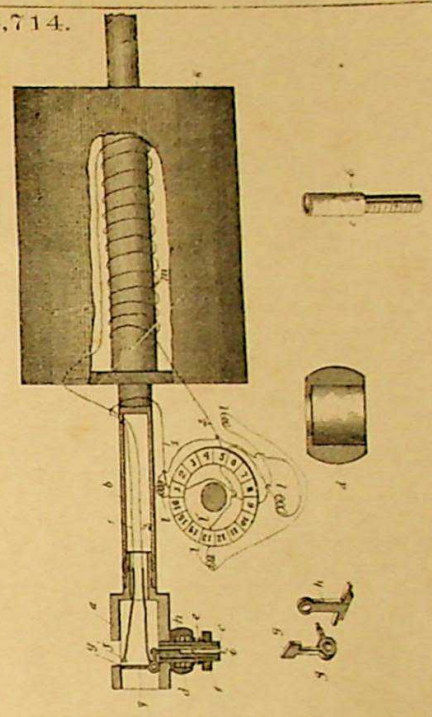
3. In a dynamo or motor, an armature-shaft provided with screw-threads, in combination with an armature removably mounted on the shaft and comprising a hollow cylinder open at the ends, end pieces provided with central apertures to receive the shaft and with arms holding the cylinder, one of said apertures being screw-threaded to screw upon the shaft, and a nut screwed upon the shaft to clamp the other end piece to the shaft, substantially as described.

4. As a new article of manufacture, an armature consisting of a hollow core open at the ends and upon the outer periphery of which the coils are adapted to be placed, the ends of said core being notched, and end pieces consisting of central aligned hubs to fit upon the armature-shaft, and radial arms to fit in said notches and hold the armature to the shaft.

404,714. REGULATOR FOR DYNAMO-ELECTRIC MACHINES OR MOTORS. JESSE F. KESTER, Terre Haute, Ind., assignor of three-fourths to Joseph H. Briggs, same place. Filed Oct. 29, 1888. Serial No. 289,410. (No model.)

Claim.—1. A regulator for a dynamo or motor, comprising a regulating-circuit, a speed-governor mounted upon a rotating part of the machine, and a circuit-controller included in the circuit and com-

404,714.



prising a stationary contact-point and a bell-crank lever pivoted to the rotating part of the machine, one arm of which is connected with the governor and the other arm forms the shifting contact movable to or from the stationary point, substantially as described.

2. A dynamo or motor regulator comprising a speed-governor rotating with the armature-shaft, a normally-open short circuit, and a circuit-controller included within the same and comprising a stationary contact-point and a lever pivoted to the armature-shaft and connected with and operated by the governor, and provided with a movable contact to engage the stationary point and close the short circuit when a determined speed is attained.

3. In a dynamo or motor regulator, the hollow portion of an armature-shaft, in combination with a stationary contact therein, and a bell-crank lever pivoted therein at its elbow to allow one arm a swinging movement into or out of engagement with the contact, substantially as described.

4. A dynamo or motor regulator comprising a hollow extension of a shaft, a centrifugal governor rotating with the same, and a circuit-controller located in the hollow extension and comprising a stationary contact and a pivoted lever connected with the governor, and provided with a contact movable to or from the stationary contact in a plane parallel with the axis of the shaft.

5. A centrifugal governor for dynamo-electric machinery, comprising a hollow slotted guide externally screw-threaded upon its outer end, a sliding weight embracing the guide, an adjustable nut upon the screw-threaded portion of the guide, a coiled spring embracing the guide between the weight and nut, and a rod within the guide and connected to move with the weight, substantially as described.

6. In a dynamo or motor, a hollow extension of the armature-shaft and a bent lever pivoted in the same, in combination with a guide screwed into and extending radially from the hollow extension, a sliding weight embracing the guide, a spring to yieldingly hold the guide against centrifugal force, and a rod connecting the weight and one arm of said lever, substantially as described.

7. A dynamo or motor regulator comprising a normally-open short circuit, including one or more armature-coils, and a circuit-controller and speed-governor to close the circuit when a predetermined speed is reached.

8. A dynamo or motor regulator comprising a normally-open regulating or short circuit, including one or more armature-coils, a resistance within the same, a circuit-controller within the circuit, and a speed-governor carried by a rotating part of the machine and connected with the controller to close the circuit when a predetermined speed is reached, for the purpose set forth.

9. In a dynamo or motor, the combination of a circuit, a hollow guide extending radially from a rotating part of the machine, a governor-weight sliding on the same, a spring and adjustable nut to regulate the tension of the spring on the weight, a T-bar located in said guide and engaging the weight and operated by the same, and a circuit-controller comprising a stationary contact, and a contact-lever pivoted at its elbow and having a horizontally-movable contact, and an arm connected with the inner end of said T-bar, substantially as described.

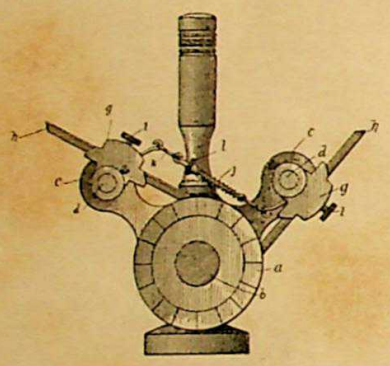
10. In a dynamo or motor, the combination of an armature-shaft, a regulating-circuit, a non-conducting hollow extension secured to said shaft, a centrifugal governor mounted upon and rotating with the same, and a circuit-controller located within said extension and comprising a stationary contact and a contact operated by the governor and movable to or from the stationary contact in a plane parallel with the axis of the shaft, substantially as described.

11. In a dynamo or motor, the combination, with an armature, of a normally-open short circuit including one or more armature-coils, a speed-governor, a circuit-controller, and a resistance-coil included in said circuit, for the purpose set forth.

12. In a dynamo or motor, the combination of an armature, a commutator for the same, a normally-open short circuit including two commutator-segments, a resistance included in said circuit, and a circuit-controller, and a speed-governor to operate the same, substantially as described.

13. A dynamo or motor regulator comprising a normally-open regulating-circuit, a circuit-controller included within the same, and a resistance-coil located within the armature, and also included within the circuit, to reduce sparking and equalize the abrupt effect when the circuit is closed, substantially as described.

404,715. BRUSH-SPRING FOR DYNAMOS. JESSE F. KESTER, Terre Haute, Ind., assignor of three-fourths to Joseph H. Briggs, same place. Filed Oct. 29, 1888. Serial No. 289,411. (No model.)



Claim.—1. In a dynamo or motor, a brush-holder support provided with spindles extending from the same parallel with the commutator, brush-holders loosely mounted upon the same to swing transversely to the axis of the commutator, and brushes carried by the holders to bear upon the commutator, in combination with arms extending from opposite sides of the holders, links of insulating material loosely secured to the arms, and a retractive spring and adjusting rod and nut connecting the links, for the purpose set forth.

2. In a dynamo or motor, a brush-holder support, two sets of brush-holders loosely carried by the same, and commutator-brushes carried by the holders, in combination with arms extending from the holders, a pair of insulating-links connecting the arms of each set of holders, and a retractive spring and tension-regulating rod connecting the two links, for the purpose set forth.

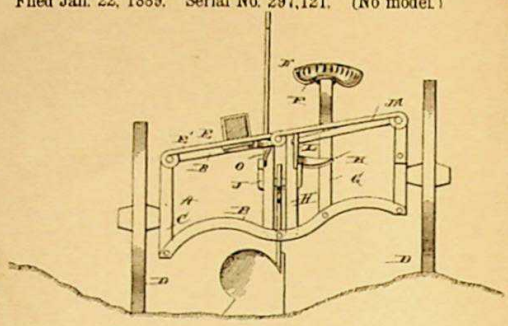
3. In a dynamo or motor, the combination of a brush-holder support provided with spindles extending parallel with the periphery of the commutator, brush-holders loosely mounted upon said spindles and provided with transverse sockets, brushes secured in said sockets to bear upon the commutator and swing to or away from the same in planes transverse to its axis, and a retractive spring connecting the holders to yieldingly hold the brushes engaging the commutator, substantially as described.

4. In a dynamo or motor, the combination of a brush-holder support, the loosely-mounted brush-holders, the brushes carried by the same and adapted to swing to or away from the commutator, links of insulating material loosely secured to the holders, and a retractive spring connecting the links to hold the brushes yieldingly in contact with the commutator, as set forth.

5. In a dynamo or motor, the combination of a brush-holder support extending in a plane above the commutator, brush-holders loosely supported by the same parallel with and over and above the commutator to swing in planes transverse to the axis of the same, commutator-brushes carried by the holders, and a retractive spring connecting the holders to yieldingly hold the brushes in engagement with the commutator, as set forth.

6. In a dynamo or motor, the combination of a brush-holder support provided with a pair of spindles extending parallel with and over the commutator, brush-holders, each having a longitudinal bearing loosely embracing a spindle and a transverse socket, brushes secured in the sockets to swing with the holders to or from the commutator, and a retractive spring connecting the holders to yieldingly hold the brushes in engagement with the commutator, substantially as described.

404,716. WHEEL-PLOW. GEORGE KIMBALL, Lawrence, Kans. Filed Jan. 22, 1889. Serial No. 297,121. (No model.)



Claim.—1. The combination of the horizontal bars B B, the vertical end bars C C, having their ends pivoted to the ends of the horizontal bars, the spindles projecting from the end bars, and the seat-supporting standard pivoted at its lower end to the lower horizontal bar B and at an intermediate point of its height to the upper horizontal bar B, as set forth.

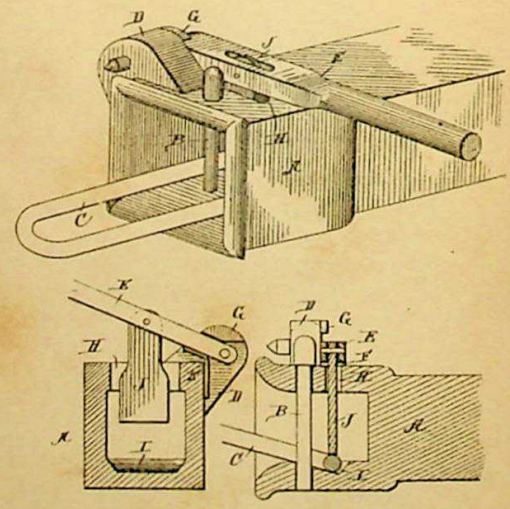
2. The combination of the horizontal bars B B and the vertical bars C C, having their ends pivoted together, the slotted supporting-arm H, pivoted to the horizontal bars B, and the yoke J, pivoted to the said arm H, the plow-beam being secured to the yoke J and projecting through the arm H, as set forth.

3. The combination of the horizontal bars B and the vertical bars C, having their ends pivoted together, the yoke E', pivoted to the bars C and supporting the tongue, the slotted supporting-arm H, pivoted to the bars B and having a forwardly-projecting branch I, pivoted to the yoke E', and the yoke J, pivoted to the arm H, the plow-beam being secured to the yoke J and projecting through the arm H, as set forth.

4. The combination of the horizontal bars B and the vertical bars C, having their ends pivoted together, the slotted arm H, pivoted to the bars B, the yoke J, pivoted to said arm H, the arm M, secured rigidly to one of the bars C, and the link L, connecting said arm with the yoke J, as set forth.

5. The combination of the bars B C, having their ends pivoted together, the arm H, pivoted to the bars B and having a forwardly-projecting branch I, the yoke J, pivoted to the arm H, the bent lever N, pivoted on the branch I of the arm H, and the link O, connecting said lever with the yoke J, as set forth.

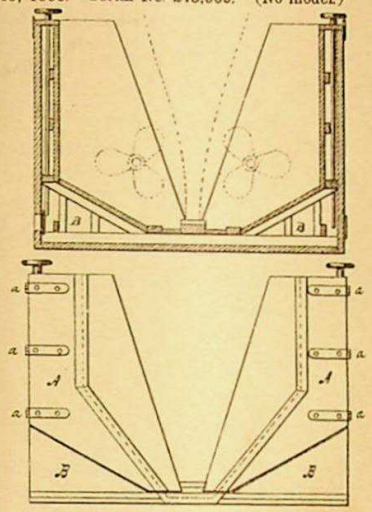
404,717. CAR-COUPLING. JONATHAN H. KING and BENJAMIN F. REED, Swan Creek, Ill. Filed Mar. 5, 1889. Serial No. 301,907. (No model.)



Claim.—1. The combination of the draw-head having a recess in its floor, the fulcrum-block on the draw-head, the lever fulcrumed on said block, the presser-plate pivoted to the lever and adapted to push the inner end of the link into the recess in the draw-head, and the spring secured to the draw-head and bearing on the lever to hold it normally elevated, as set forth.

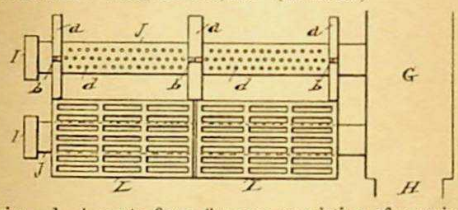
2. The combination of the draw-head having a recess in its floor and a transverse slot in its top, the fulcrum-block on the draw-head, the lever fulcrumed to said block and extending over the draw-head the presser-plate pivoted to said lever and depending therefrom through the slot in the draw-head and having its lower end arranged over the recess in the floor of the draw-head, the spring secured to the draw-head and bearing against the lever, and the stop projecting laterally from the fulcrum-block above the lever, as set forth.

404,718. COFFER-DAM. HENRY P. KIRKHAM, Brooklyn, N. Y. Filed May 15, 1888. Serial No. 273,969. (No model.)



Claim.—In a coffer-dam, the gates A, hinged to the sides of the dam and extending from the top to the bottom of the dam, said gates having oblique bottom edges, as and for the purpose described.

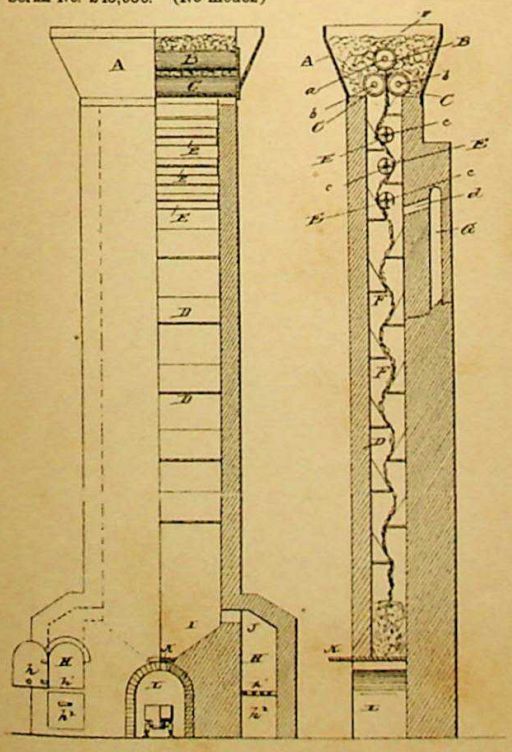
404,719. GRATE-BAR. GEORGE M. KNIGHT, Adrian, Mich. Filed Sept. 26, 1888. Serial No. 286,473. (No model.)



Claim.—1. A grate for a furnace, consisting of a series of pipes extending underneath and adjacent to a series of grate-sections and provided on their upper surfaces with perforations, of bearings on said pipes formed integral therewith for supporting said grate-sections, substantially as described.

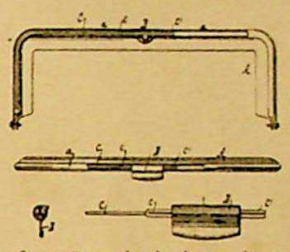
2. The combination, in a furnace-grate, of the grate-sections L, pipes J, having perforations *d*, bearing-plates *a*, formed integral with said pipes and provided with lugs *b*, and a chamber G, into which said pipes extend and from which a current of air is supplied to the pipes, substantially as described.

404,720. CALCINING-FURNACE. DAVID LEWIS, JOHN H. WILLIAMS, and MAGGIE MATTHEWS, Anaconda, Mont. Filed Aug. 2, 1887. Serial No. 245,936. (No model.)



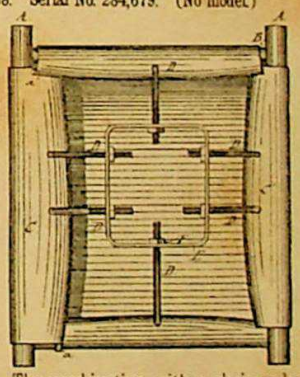
Claim.—In a furnace for calcining ores, the combination of a stack provided with oppositely-inclined internal projections and alternate fan-wheels located horizontally between said projections, a hopper upon the top of the stack provided with feed-rollers, a chamber at the bottom of the stack provided with an inclined bottom and a discharge-door at the lower part thereof, an open archway directly under said door, one or more furnaces near the bottom of said stack, having exit-flues communicating with said chamber, and a down-comer into which the stack opens near its upper end, substantially as described.

404,721. FRAME FOR POCKET-BOOKS OR OTHER ARTICLES. LOUIS MESSER, New York, N. Y. Filed Apr. 25, 1889. Serial No. 308,500. (No model.)



Claim.—In a frame for pocket-books or other articles, the combination, with the catch-carrying jaw of the frame and with the catch, of a spring-wire housed in the bead *a* of the jaw and extending through the catch along one side of the interior of the jaw and a certain distance down in the side of the jaw, the outer end of said spring-wire being bent back upon itself to form gudgeons *c c'* on both ends of the catch, substantially as described.

404,722. BED-BOTTOM AND MEANS FOR TIGHTENING AND SUPPORTING THE SAME. JOSEPH E. MOORE, Warwick, Mass. Filed Sept. 5, 1888. Serial No. 284,679. (No model.)



Claim.—1. The combination, with a chair or bedstead frame, a covering fabric and reeds enseamed within said fabric, substantially as described, of the clamping device composed of an endless ring, screw-threaded hooks taking hold of said fabric, and reeds and nuts run upon said hooks and bearing within said band to hold said fabric to a suitable tension, substantially as set forth.

2. The combination, with a chair or bedstead frame, two pieces of woven fabric (the one overlapping the other with their warp-threads crossing) folded over the ends and sides of said frame, and the strengthing-reeds for the said fabric held in fold by the hooks D, of the adjusting device composed of the metallic ring and screw-threaded hooks and nuts, said hooks taking hold of the said fabric and reeds, and the said nuts engaging the screw-threaded ends of the said hooks and bearing against the inner face of the said ring, as and for the purpose set forth.

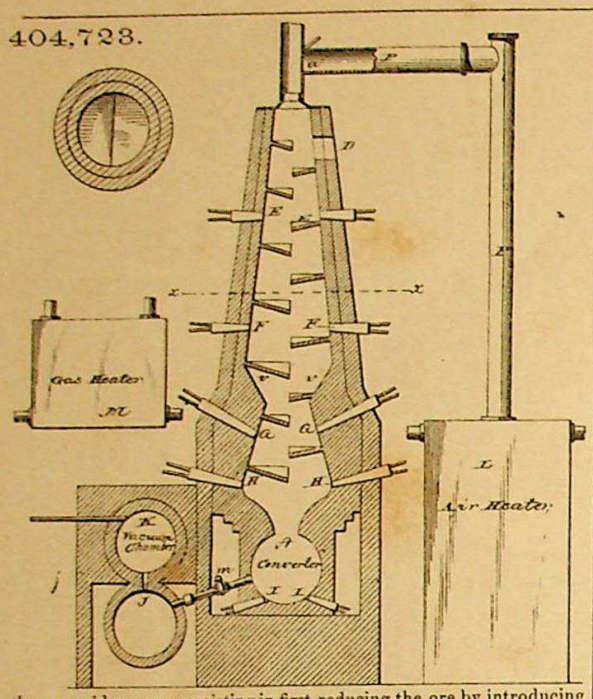
404,723. METHOD OF PRODUCING STEEL DIRECT FROM ORE. WILLIAM F. M. MCCARTY, Hagerstown, Md., assignor, by direct and mesne assignments, of part to Jane Logan, same place, Catherine Eishon, Philadelphia, Pa., and Heman D. Wallbridge. Filed Feb. 26, 1889. Serial No. 301,297. (No model.)

Claim.—1. The process which consists in introducing into a highly-heated charge of iron ore and flux hydrogen gas, and subsequently at different points into the charge hydrogen and carbonaceous matter in a state of combustion in order to melt and subsequently carbonize the metal, substantially as set forth.

2. The process consisting in introducing into the highly-heated charge of iron ore and flux hydrogen gas to reduce the ore, subsequently introducing hydrogen and carbonaceous matter with air at different points into the same charge to melt the metal, and finally introducing hydrogen and atmospheric air with or without carbon into the molten metal to convert it into steel, substantially as set forth.

3. The process herein described of producing steel direct from

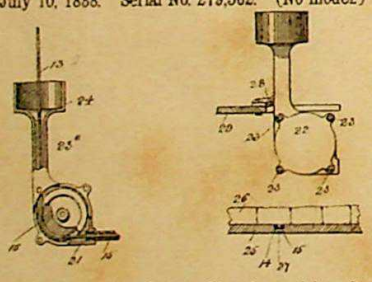
404,723.



the ore, said process consisting in first reducing the ore by introducing pure hydrogen into the charge of highly-heated ore and flux, then introducing hydrogen and carbonaceous matter with air to melt the metal, and subjecting the molten metal in its passage from the stack to the converter to the action of hydrogen and carbonaceous matter, substantially as described.

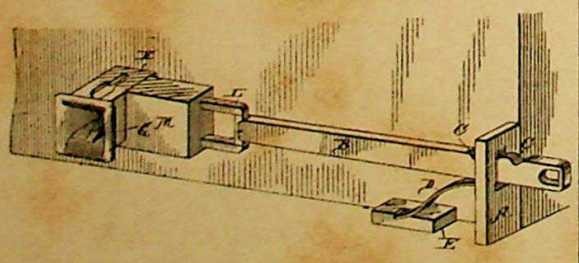
4. The herein-described continuous process of producing steel direct from the ore, said process consisting in first introducing hydrogen in the charge of highly-heated ore and flux to reduce the ore, then subjecting the charge to the action of hydrogen and carbonaceous material with air to melt the metal, then subjecting the molten metal to the action of purifying gases and air, and finally subjecting the molten steel thus produced to the action of a vacuum, substantially as set forth.

404,724. RAILWAY-GATE. ALEXANDER J. MCDONALD, Chicago, Ill. Filed July 10, 1888. Serial No. 279,562. (No model.)



Claim.—In a railway-gate, the combination, with a fixed part of the gate structure, of a cable guard or covering hinged thereto and adapted to support a sheave for the cable, and a conduit-pipe connected rigidly to said guard or covering, substantially as described.

404,725. CAR-COUPLING. SAMPSON S. MCKEAND, Ceredo, W. Va. Filed Mar. 28, 1889. Serial No. 305,162. (No model.)



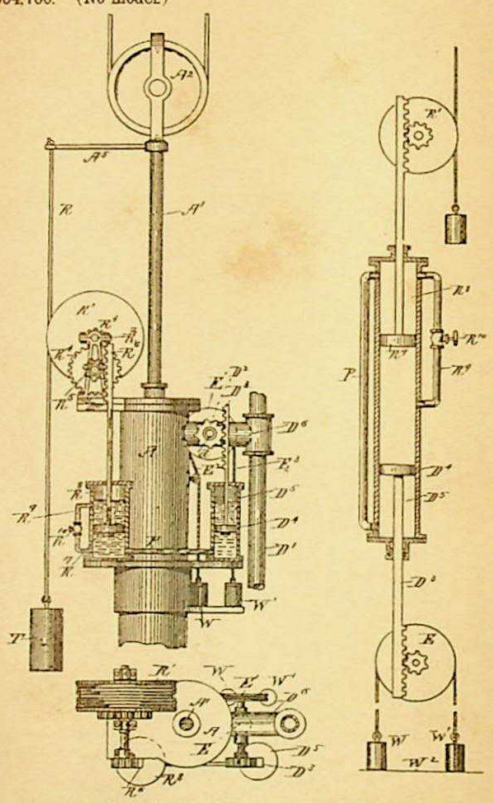
Claim.—1. The combination, with the draw-head and the bracket A, of the transverse sliding frame adapted to hold the link in the draw-head, the lever pivoted to said sliding frame and provided with notches in its edge adapted to engage the said bracket, and the spring bearing on the said lever to hold the notches in engagement with the bracket, as set forth.

2. The combination, with the draw-head having the longitudinal rib on its floor, of the link adapted to engage said rib, and the sliding frame passing transversely through the draw-head and adapted to hold the link in engagement with said rib, as set forth.

3. The combination of the draw-head having the rib G, the link adapted to engage said rib, the lifting-plate arranged longitudinally in the draw-head in rear of said rib, and the sliding frame having its upper arm adapted to pass over the end of the link and its lower arm adapted to raise the lifting-plate to release the link, as set forth.

4. The combination, with the draw-head having the lateral extension M and the rib G, of the link adapted to engage said rib, the lifting-plate arranged in the draw-head in rear of said rib, and the sliding frame moving in the extension M and having its upper arm adapted to enter the draw-head and its lower arm provided with an inclined surface N, adapted to act on the lifting-plate, as set forth.

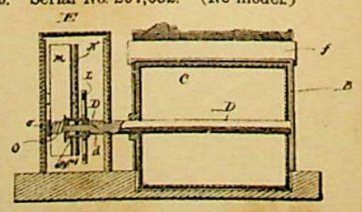
404,726. SELF-REGULATING HYDRAULIC ELEVATOR. WILLIAM E. NICKERSON, Cambridge, Mass. Filed Mar. 25, 1889. Serial No. 304,700. (No model.)



Claim.—1. In a hydraulic elevator, the combination of the main hoisting-piston and its cylinder, and a port for inlet and outlet having a throttle-valve held normally open by a retractor device, with a piston located in a fluid-cylinder and adapted to close said throttle-valve (when the hoisting mechanism of the elevator attains undue speed) by impulse generated by the motion of a secondary piston adapted to move with a fixed ratio to the hoisting mechanism, said secondary piston being located in a secondary cylinder having a restricted passage from one side of its piston to the other, and a fluid connection with the cylinder containing the valve-moving piston, substantially as described, and for the purpose set forth.

2. In a hydraulic elevator, the combination of the main cylinder A and its piston and piston-rod, port D^6, for inlet and outlet, having a throttle-valve E, and valve-retractor device consisting of the pulley E′, rope E^2 E^3, and weights W W′, with the piston-rack D^3, piston D^4, cylinder D^5, pipe P, cylinder R^8, having a restriction-pipe R^9, and piston R^7, adapted to move in a fixed ratio to the movement of the elevator-carriage, substantially as and for the purpose set forth.

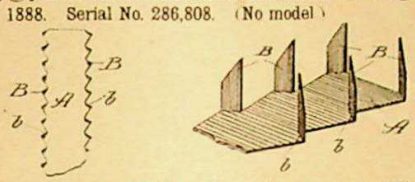
404,727. FLY-TRAP. JUSTIN E. PACKARD, Mendocino, Cal. Filed Jan. 26, 1889. Serial No. 297,632. (No model.)



Claim.—In a fly-trap, the combination, with the casing, of the detachable cage, and the revoluble drum provided with a shaft having a shoulder *d*, the gear-wheel mounted loosely on the shaft and connected to suitable clock mechanism, and the spring O, coiled on the

shaft and bearing against the said gear-wheel to press it against the shoulder *d*, substantially as and for the purpose specified.

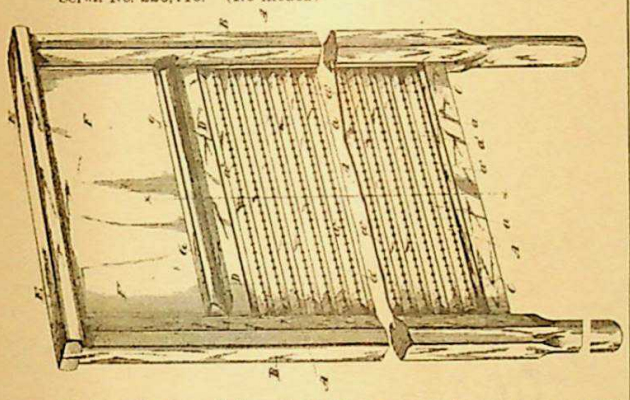
404,728. BOX-FASTENER. LUDWIG PETTERSON, Chicago, Ill. Filed Sept. 29, 1888. Serial No. 286,808. (No model.)



Claim.—1. As a new article of manufacture, a metallic fastener consisting of a center strip having a row of teeth along each edge with parallel sides and bent out of the plane of the strip on a line at an angle to the axis of the center strip, substantially as described.

2. As a new article of manufacture, a metallic fastener consisting of a center strip, a row of teeth along each side of and bent at an angle to this strip, a portion of said strip being left without teeth, whereby it is adapted to be bent around a corner, substantially as described.

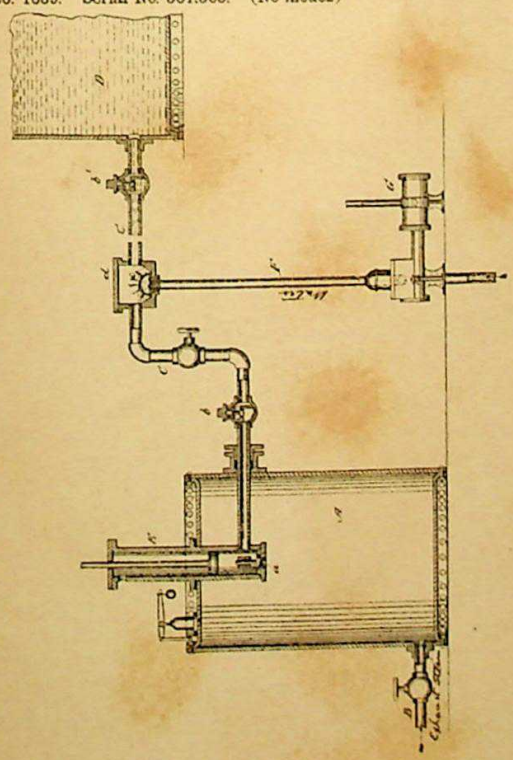
404,729. WASH-BOARD. ISAAC N. POE, Toledo, Ohio, assignor to the Union Manufacturing Company, same place. Filed Dec. 4, 1886. Serial No. 220,716. (No model.)



Claim.—1. A wash-board which is provided with a corrugated metal body that upon one face has plain smooth ribs, and upon its opposite face has its ribs divided into short sections by small cross-grooves, substantially as and for the purpose shown.

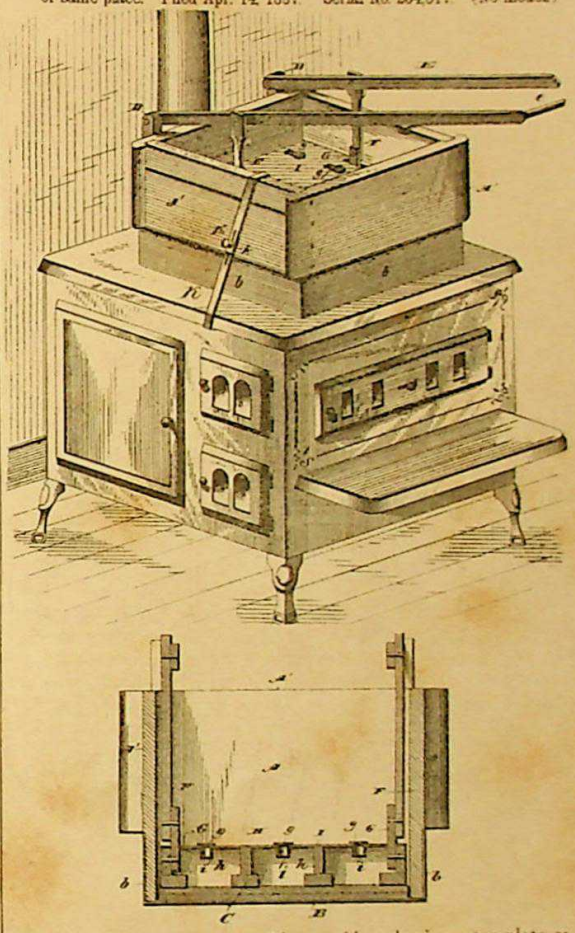
2. A wash-board which has a metal body that upon one face is provided with plain transverse ribs and grooves, and upon its opposite face has transverse ribs and grooves and small cross-grooves which pass through the tops of said ribs, substantially as and for the purpose set forth.

404,730. BOILER-FEED. JULIO H. RAE, Milford, Del. Filed Feb 28, 1889. Serial No. 301,503. (No model.)



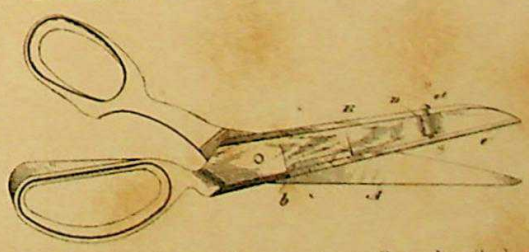
Claim.—The combination, with a steam-boiler and a tank for the reception of exhaust-steam from an engine, of a pump communicating with said tank, a valved feed-pipe leading from said pump to the boiler, and a water-spraying pipe discharging into the feed-pipe between the tank and the boiler, whereby the exhaust-steam is drawn from the tank, forced into the feed-pipe, condensed therein, and forced into the boiler, substantially as described.

404,731. WASHING-MACHINE. ZADOCK RANDEL, De Kalb, Mo., assignor of two-thirds to Harison B. Gardner and Henry R. Jones, both of same place. Filed Apr. 14, 1887. Serial No. 234,817. (No model.)



Claim.—A pounder for washing-machines, having a top plate or sheathing with elongated slots in two opposite sides thereof, and links to which operating-levers are adapted to be secured, projecting downward through said slots and attached to the inner surfaces of the side bars of the pounder above the lower edges of said strips, whereby obstructing projections are avoided on the sides and bottom of the pounder and permit the same to cover more space and fit snugly within the tub or receptacle, substantially as described.

404,732. ADDRESSING-MACHINE. JAMES W. H. REISINGER, Meadville, Pa. Filed Oct. 4, 1888. Serial No. 287,246. (No model.)



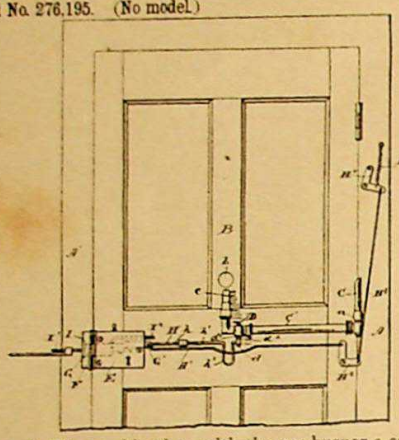
Claim.—1. The combination, substantially as described, of the blade A, the blade B, pivoted thereto and provided near its point with a threaded boss, a horizontal pressure-plate secured at its inner end to blade B near the pivot, and a vertical set-screw adjustably seated in the threaded boss to bear upon said plate near its outer end.

2. The combination, with the blades A and B, pivoted to each other and provided with operating-handles, of a plate C, carried by one of the blades, and a set-screw, also carried by the same blade, against which the plate will abut, substantially as shown, and for the purpose set forth.

3. The combination, with the blade A, of a blade B, having a pro-

jection *b*, to which a plate C is removably attached, and a lug secured to said blade between the point and projection *b*, said lug having a screw-threaded perforation for the reception of a set-screw *d*, against which the plate will abut, substantially as shown, and for the purpose set forth.

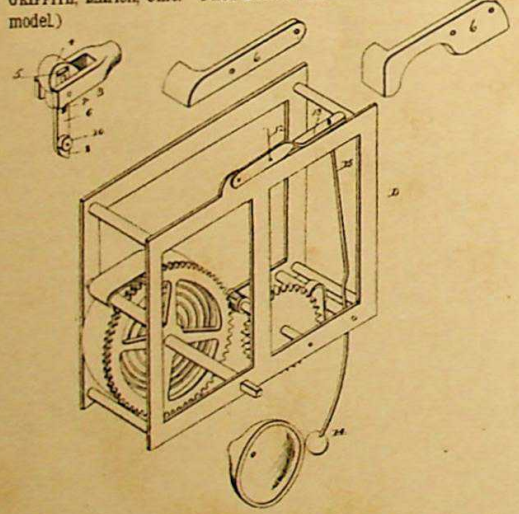
404,733. DEVICE FOR AUTOMATICALLY OPERATING THE STOP-COCK OF A GAS-BURNER. CHARLES M. RIDER, Newark, Ohio, assignor of one-half to William Baker, same place. Filed June 6, 1888. Serial No. 276,195. (No model.)



Claim.—1. The combination, with the gas-burner *c*, secured to a door and having the stop-cock D, provided with the lever-arm *d*, of the lock E, having the sliding locking-bolt G, and the rod H, connecting the locking-bolt and lever-arm and formed in two sections *h h'*, having a screw-threaded connection and provided with the loop h^2, all constructed, arranged, and operating substantially as shown and described, as and for the purpose set forth.

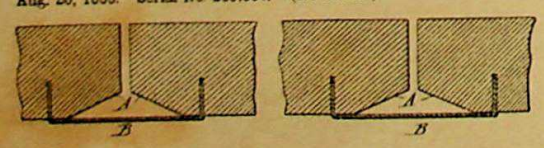
2. The combination, with the gas-burner *c*, having the stop-cock D, provided with the lever-arm *d*, the bearing d', set-screw d^2, mounted in said bearing and having a tapered end, and the stop d^3 on the portion of the gas-pipe in which the stop-cock is located, with which the end of the set-screw engages, of the lock E, having the locking-bolt G, and rod H, connecting said locking-bolt G and lever-arm *d*, all constructed, arranged, and operating substantially as shown and described, as and for the purpose set forth.

404,734. BURGLAR-ALARM. JOSEPH W. ROADS and THOMAS J. GRIFFITH, Marion, Ohio. Filed Dec. 22, 1888. Serial No. 294,364. (No model.)

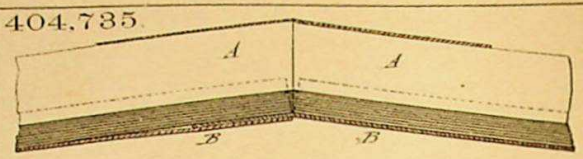


Claim.—In a burglar-alarm, the combination of a bracket adapted to be secured over a window or door, a cam-shaped trigger pivoted in the bracket having a recess in one side, an adjustable arm moving in the said recess designed to rest against the window or door, ringing mechanism, a trigger for releasing the same, and a wire connecting the cam-shaped trigger and the trigger of the ringing mechanism, whereby, when the said adjustable arm is moved, the ringing mechanism will be released, substantially as described.

404,735. CAR-ROOF. GEORGE A. ROBERTS, Paducah, Ky. Filed Aug. 25, 1888. Serial No. 283,807. (No model.)

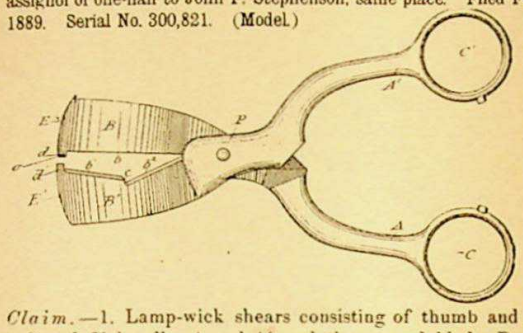


404,735.



Claim.—In a roof, the combination of the boards having their lower edges beveled away so as to form a chamber, with the pans B, having their edges turned up at right angles and made to fit in grooves formed in the under side of the boards, substantially as shown.

404,736. WICK-TRIMMER. JOHN L. SANFORD, Albany, N. Y., assignor of one-half to John F. Stephenson, same place. Filed Feb. 23, 1889. Serial No. 300,821. (Model.)

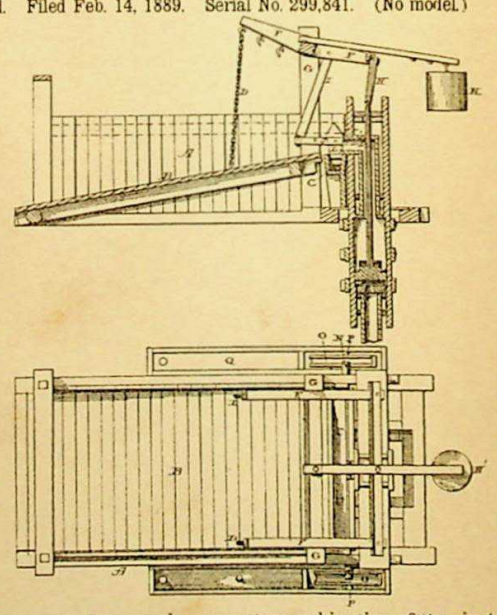


Claim.—1. Lamp-wick shears consisting of thumb and finger pieces C and C', handles A and A', and the curved blades B and B', said blades being unequally curved and furnished with the spurs *d* and *d'*, beveled on their opposing faces, substantially as set forth.

2. In lamp-wick shears, substantially such as described, one of the blades having a straight cutting-edge *b*, and the other blade formed with the angular cutting-edge *b'* and b^2, and the recess *c*, as hereinbefore set forth.

3. Lamp-wick shears consisting of thumb and finger pieces C and C', handles A and A', and blades B and B', said blades being unequally curved and furnished with the spurs *d* and *d'*, beveled on their opposing faces, the blade B having a straight cutting-edge *b*, and the blade B' formed with the angular cutting-edges *b'* and b^2 and the recess *c*, substantially as set forth.

404,737. STOCK-PUMP. GOTTLIEB W. SCHROEDER, Huntington, Ind. Filed Feb. 14, 1889. Serial No. 299,841. (No model.)

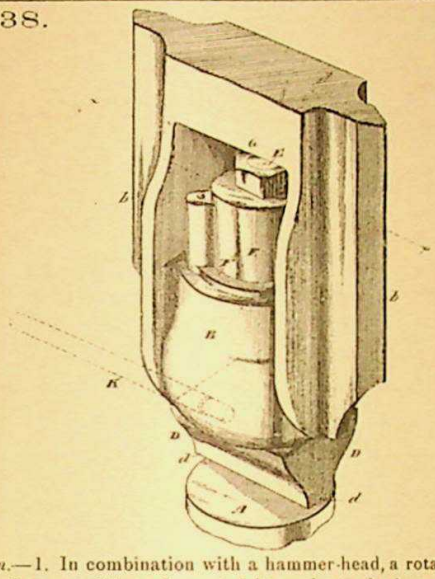


Claim.—1. In a stock-pump, the combination of the pivoted platform, the uprights G, the frame F, the weight H, connected to the frame, the chains D, for connecting the frame to the platform, the connecting-rod I, the pivoted lever J, operated by the rod I, the valve L, pivoted to the lever, and the trough C, having an opening through one end, substantially as shown.

2. The combination of the trough C, the platform, the pump, and the pivoted frame placed above the pump and connected both to it and the platform, with the trough Q, placed at the end of the one C, so as to receive water therefrom, the partition P, placed in one end of the trough, and the pivoted guide O, placed above the partition and having a float R secured to its inner end, substantially as described.

404,738. APPARATUS FOR STRAIGHTENING SAWS. DANIEL SIMONDS, Fitchburg, Mass. Filed July 28, 1888. Serial No. 281,321. (No model.)

404,738.



Claim.—1. In combination with a hammer-head, a rotatable die adapted to be rotated in a plane at right angles to the hammer-head, and the pivot-stem thereon connecting it with the head, substantially as and for the purpose shown.

2. In combination with a hammer-head, the rotatable die pivotally attached thereto having a narrow elongated striking-surface extending in a plane parallel to the plane of rotation of the die on the hammer, substantially as and for the purpose described.

3. In combination with a hammer-head, the rotatable die connected with the hammer-head by means of a pivot-stem and having an elongated striking-surface at right angles to the pivot-stem, substantially as and for the purpose described.

4. In combination with a hammer-head and the rotatable die, a handle for rotating the die, substantially as and for the purpose described.

5. In an apparatus for straightening saws, in combination with an anvil or support for a saw and the hammer-head, the rotatable die pivotally attached to the head, so as to be rotatable in a plane at right angles to the travel of the hammer, provided with an elongated striking-surface whose direction with reference to the anvil-surface is changed by the rotation of the die on the hammer-head, substantially as and for the purpose described.

6. In combination with the hammer-head and the rotatable die carried thereby, a movable pawl carried with the die, and a recess in the hammer-head to be engaged by the pawl to lock the die from accidental rotation, substantially as and for the purpose described.

7. In combination with the hammer-head and the rotatable die connected with the head by a stem, a spring acting upon such stem to hold the die up against the hammer-face, substantially as and for the purpose specified.

8. In combination with the hammer-head, the rotatable die having a stem engaging an opening in the head, the cap on the stem, and the spring around the stem within the cap, substantially as and for the purpose described.

9. In combination with the hammer-head, the rotatable die thereon provided with a stem extending up through an opening in the head, the cap rigidly connected with the stem, and the spring-actuated pin carried by the cap and adapted to engage suitable depressions in the head, substantially as and for the purpose specified.

10. In combination with the hammer-head and the rotatable die, a spring-actuated pin connected with the die, so as to be moved as the die rotates, and suitable depressions on the hammer-head to be engaged by the pin, substantially as and for the purpose shown.

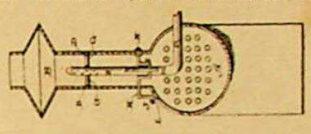
11. In combination with the hammer-head provided with one or more depressions, the rotatable die having the stem for connecting it with the head, the cap on the stem, the spring-pin carried by the cap, and the spring around the stem within the cap, substantially as and for the purpose set forth.

12. In combination with the hammer-head provided with a stop-pin, the rotatable die with its stem, and suitable stops rigidly connected with the stem for limiting the rotation of the die, substantially as and for the purpose described.

13. In combination with the hammer-head and the rotatable die carried thereby, a movable pawl carried with the die in its rotation, and suitable depressions in the hammer-head to be engaged by the pawl when the die has been rotated to different positions with reference to the hammer-head, substantially as and for the purpose shown.

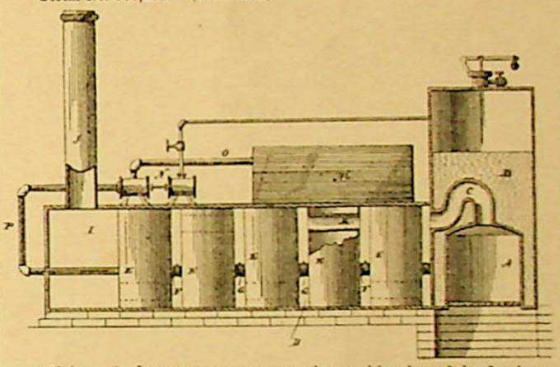
14. In combination with the hammer-head and the rotatable die carried thereby, suitable stop devices for limiting the rotation of the die in opposite directions, a pawl on the die, and the two pawl-engaging recesses or depressions on the hammer so situated as to engage the pawl and lock the die at opposite ends of its movement, substantially as and for the purpose set forth.

404,739. EXHAUST MECHANISM. JOHN D. SMITH, Murfreesborough, Tenn. Filed Dec. 18, 1888. Serial No. 293,938. (No model.)



Claim.—The combination of the stack, the exhaust-pipe, a pipe pivoted in the stack and having its lower end movable in relation to the exhaust-pipe, and a mechanism for adjusting the lower end of the movable pipe, the upper end of the movable pipe being contracted and perforated and thereby partially closed, substantially as described.

404,740. STEAM-GENERATOR. WILLIAM SNEE, Pittsburg, Pa., assignor of part to William Smith, same place, and Charles T. Russell, Allegheny, and William Guckert, Pittsburg, Pa. Filed Feb. 26, 1889. Serial No. 301,234. (No model.)



Claim.—1. In a steam-generator, the combination of the fire-box, the upright boiler within which the same is located, the curved flue in the top of the fire-box, the oblong heating-chamber communicating at one end with said flue and at the other end with the smoke-chamber, a series of heaters located within said chamber communicating with one another by pipes and provided with diametrical flues located alternately in the top and bottom part of said heaters, and the side walls or partitions built up between the sides of the several heaters and the adjacent sides of the chamber within which they are placed, substantially as and for the purpose shown and set forth.

2. In a steam-generator, the combination of the fire-box, the upright boiler within which the same is located, the curved flue in the top of the fire-box, the oblong heating-chamber communicating at one end with said flue and at the other end with the smoke-chamber, a series of heaters located within said chamber communicating with one another by pipes and provided with diametrical flues located alternately in the top and bottom part of said heaters, the side walls or partitions built up between the sides of the several heaters and the adjacent sides of the chamber within which they are located, the feed-water tank on top of the heating-chamber, the feed-water pump, and the pipe connecting said pump with that one of the heaters which is located farthest from the fire-box, substantially as and for the purpose shown and set forth.

404,741. APPARATUS FOR RAISING QUICKSAND. HENRY STOLTZE, Sr., Manitowoc, Wis. Filed Feb. 6, 1889. Serial No. 298,839. (No model.)

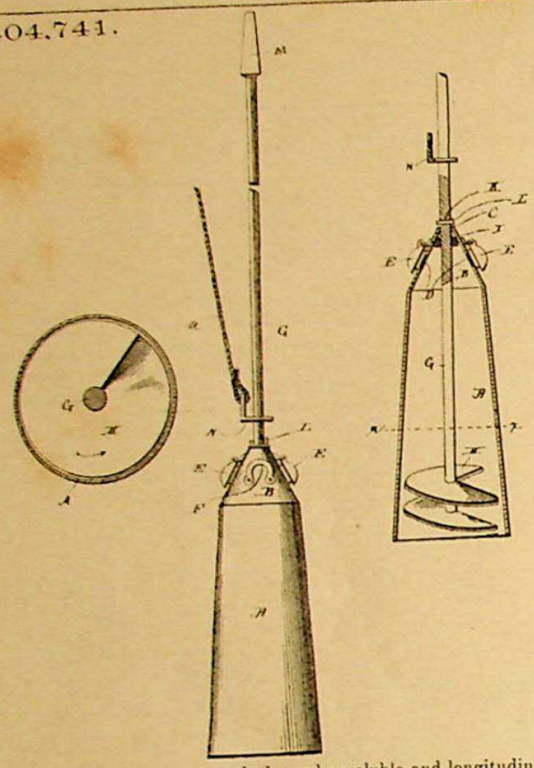
Claim.—1. The combination of the tapered case having the outwardly-opening valves at its upper end, the rod revoluble in the case, and the boring-bit attached to the said rod and arranged in the lower end of the case, substantially as described.

2. The combination of the tapered case having the valves at its upper end, the rod revoluble in the case and having the boring-bit at its lower end, means, substantially as set forth, to rotate the said rod, the plate N, pivotally connected to the said rod, and the elevating-rod attached to said plate, substantially as described.

3. The combination, in apparatus for raising quicksand, of the case having the valves at its upper end, the rod G, extending through an opening in the upper end of said case and revoluble therein, said rod having the collar I, adapted to bear under the top of the case, and the opening K above said collar, the boring-bit attached to the lower end of the rod and arranged in the bottom of the case, and the pin or key adapted to be inserted in the opening K, substantially as described.

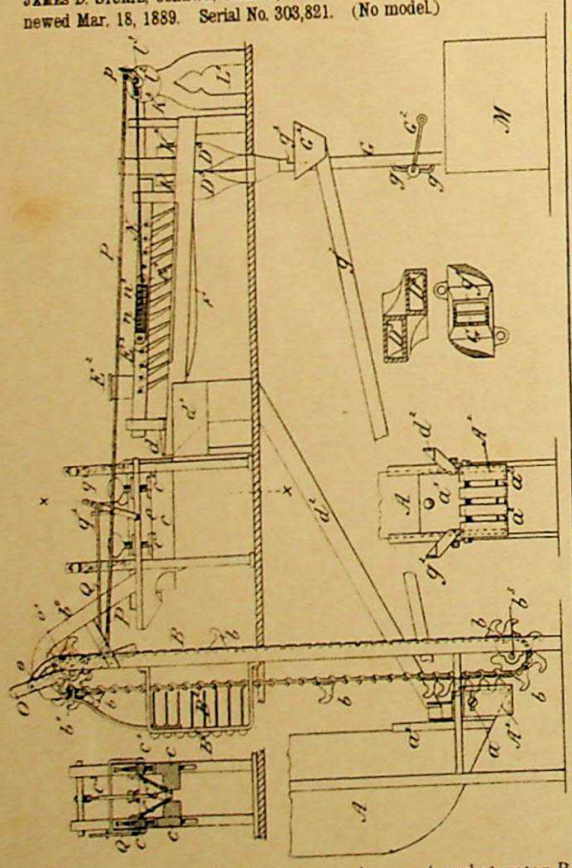
4. The combination of the tapered case having the outwardly-

404,741.



opening valves at its upper end, the rod revoluble and longitudinally movable in the case, and the boring-bit attached to the rod and arranged in the lower end of the case, substantially as described.

404,742. FEED MECHANISM FOR CHAIN-LINK MACHINES. JAMES D. STORIE, Oshawa, Ontario, Canada. Filed Nov. 14, 1887. Renewed Mar. 18, 1889. Serial No. 303,821. (No model.)



Claim.—1. The combination, with the hopper A and elevator B, having fingers or hooks thereupon, of the well or chamber A′, having a slotted front through which said fingers project, for the purpose described.

2. The combination, with the hopper A and elevator B, having fingers or hooks thereupon, of the well or chamber A′, adjustable horizontally and having a slotted front, substantially as and for the purpose specified.

3. The combination, with the frame and an elevator having hooks or fingers for carrying drive-chain links, of a brush adapted to adjust the links upon said hooks, substantially as and for the purpose specified.

4. The combination, with the elevator having hooks or fingers for carrying drive-chain links, of a comb arranged at the upper end of said elevator and adapted to remove such links from said hooks or fingers, substantially as and for the purpose set forth.

5. The combination, with the elevator B, having fingers or hooks b b, of the comb b^5, chute b^6, and a trough or receptacle for the links, substantially as set forth.

6. In a drive-chain-link feeding-machine, the combination, with a feeding-chute, of the trough C, constructed with adjustable beveled blocks c c and adjustable sloping inner walls c^2 c^2, substantially as and for the purpose described.

7. In a drive-chain-link feeding-machine, the combination, with a track or way adapted to receive the loose links and suspend them by their heads or knuckles, or raking or pushing devices engaging with said heads or knuckles, so as to move said loose links toward the point of delivery, substantially as specified.

8. In a drive-chain-link feeding-machine, the combination, with a track or way along which the loose links travel while suspended by their heads or knuckles, of a reciprocating bar carrying pivoted raking or pushing bars or teeth adapted to engage with the heads of such loose links and advance the latter along said track or way, substantially as specified.

9. The combination, with the trough C, of the reciprocating rakers C′, substantially as and for the purpose specified.

10. The combination, with the rails D′ D^2, of the reciprocating rakers E, substantially as and for the purpose specified.

11. In a drive-chain-link feeding-machine, the combination, with a rail adapted to be embraced or straddled by the hook portions of the links and with means for causing said links to move upon said rail, of means for lubricating the rail, whereby the interior of the locking knuckles or hooks may also be lubricated, substantially in the manner set forth.

12. In a drive-chain-link feeding-machine, the combination, with the track or way along which the links travel, of a device for scraping and cleaning the insides of the hooks, substantially as described.

13. The combination, with the track upon which the links travel, of the comb W, for the purpose set forth.

14. The combination, with a rail for conveying the links, of the hollow raker-bar E′, hollow perforated pivots e, and hollow rakers E, whereby a lubricant is conveyed from the raker-bar to the rail, substantially as and for the purpose described.

15. In a drive-chain-link feeding-machine, the combination, with a rail for conveying the links and rakers for moving same thereon, of the friction-plate d^5, for the purpose described.

16. In a drive-chain-link feeding-machine, the combination, with a guideway in which the links travel with their heads uppermost, of two rails diverging from said guideway and adapted to catch the links whose hooks are turned toward them, substantially as and for the purpose specified.

17. In a drive-chain-link feeding-machine, the combination, with a guideway in which the links travel with their heads uppermost, of two rails diverging from said guideway and adapted to catch the links whose hooks are turned toward them, and right and left twisted spouts arranged to turn two series of links and deliver them through a single spout with their hooks turned all in the same direction, substantially as and for the purpose specified.

18. In a drive-chain-link feeding-machine, the combination, with a delivery spout or conductor, of an overflow device whereby surplus links will be thrown out and only a regulated quantity delivered at the end of the spout, substantially as and for the purpose specified.

19. The combination, with the double-twist spouts D^5 D^6 of the single spout G, having the overflow-opening g', for the purpose specified.

20. In a spout or chute for delivering links, having a device for stopping its outlet end, the overflow-opening g', for the purpose described.

21. In combination with the spout G, having an overflow-opening, the hopper G′, and return-spout g^2, for the purpose described.

22. In combination with a guideway for drive-chain links, the shield d, for throwing out misplaced links, arranged substantially as described.

23. The combination, with the guideway D and shield d, of the hopper d' and return-spout d^2, for the purpose described.

24. The combination, with the rails for delivering and spouts for receiving the links, of the strikers K K′ and means for operating same, substantially as and for the purpose described.

25. The combination, with the strikers K K′, operating as described, the pivoted lever K^2, and driving shaft L, of the cam l, substantially as and for the purpose set forth.

26. In a drive-chain-link feeding-machine, the combination, with

the rakers and means for driving same, of a spring adapted to compensate for the movement of said rakers when the latter are held stationary from any accidental cause, substantially in the manner described.

27. The combination, with the raker-bar E' and rakers connected thereto and with the rod N and means for working same, of the coiled spring *n*, substantially as and for the purpose specified.

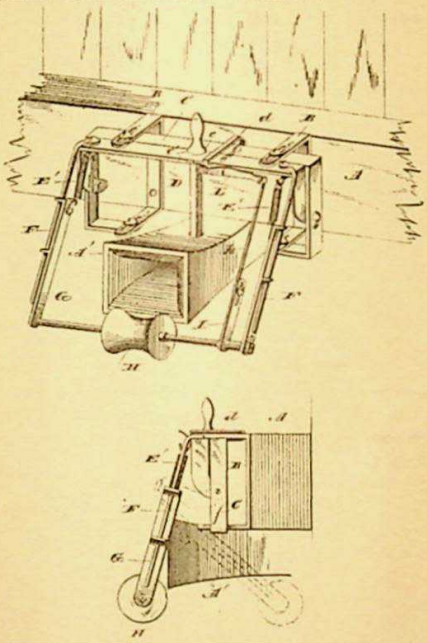
28. The combination, with the driving-shaft L, having a crank wheel or disk thereon, of rod P, lever O, having a pawl, shaft b^4, having a ratchet thereon, elevator B, and shaft b^3, all combined substantially as and for the purpose described.

29. The combination, with the raker-bar C^2, carrying rakers and having the fork *q'*, of the pivoted bridle *q*, rod Q, and lever O, operated as described, all substantially as and for the purpose described.

30. The combination, with the rails D' D^2, of the knife-edges d^3 d^4, for the purpose set forth.

31. The oil-pan F, in combination with the rails D' D^2, rakers E, and hollow raker-bar E', as described.

404,743. CAR-COUPLING. ISAAC STOUT, Mackinaw, Ill. Filed Apr. 4, 1889. Serial No. 305,956. (No model.)



Claim.—1. The combination, with the draw-head of a car, of a pin-support, consisting of a suitable supported transverse bar, a bar pivoted thereto, and provided with means for releasing a catch connecting the bars, substantially as shown.

2. In a pin-support and link-guide for car-couplings, a frame C, adjustably secured to the car-body, the bar D, pivoted thereto and provided with rods F F, frame G, sliding upon said bars F, and carrying a roller on the cross-bar thereof, substantially as shown, and for the purpose set forth.

3. The combination, in a pin-support and link-guide for car-couplings, of brackets rigidly secured to the car-body above the draw-head, a rectangular frame supported thereby and carrying a frame D, which is pivotally attached thereto, the said frame D carrying depending bars, to which a sliding frame is connected, the cross-bar of the sliding frame carrying a roller, and an arm for operating a lever engaging with a spring-catch, whereby the pin-supporting bars are separated when the roller-carrying frame is depressed, substantially as shown, and for the purpose set forth.

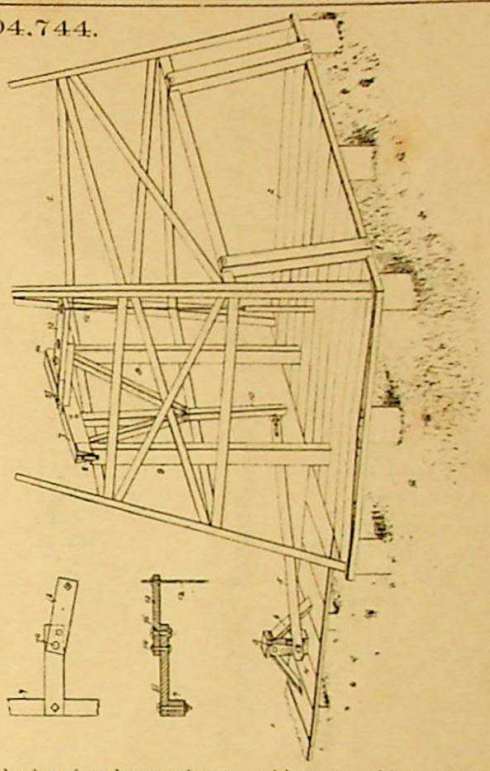
4. The combination, in a pin-support and link-guide for car-couplings, of a rigid frame attached to the car-body, said frame having a spring-catch and a central recess, a swinging frame pivoted thereto having a corresponding recess, a pivoted lever for releasing the spring-catch, guide-rods for supporting a sliding frame, the said sliding frame being connected to the guide-rods and to the pivoted frame by coiled springs, and carrying a roller and an arm, which is connected by a rod to the pivoted lever, the parts being organized substantially as shown, and for the purpose set forth.

404,744. WELL PUMPING RIG. COCHRAN C. STOVER, Bradford, Pa. Filed Oct. 31, 1888. Serial No. 289,632. (No model.)

Claim.—1. The combination of a pump-beam with a laterally-movable beam pivoted to the pump-beam, and to which the polish-rod of a well may be connected, substantially as described.

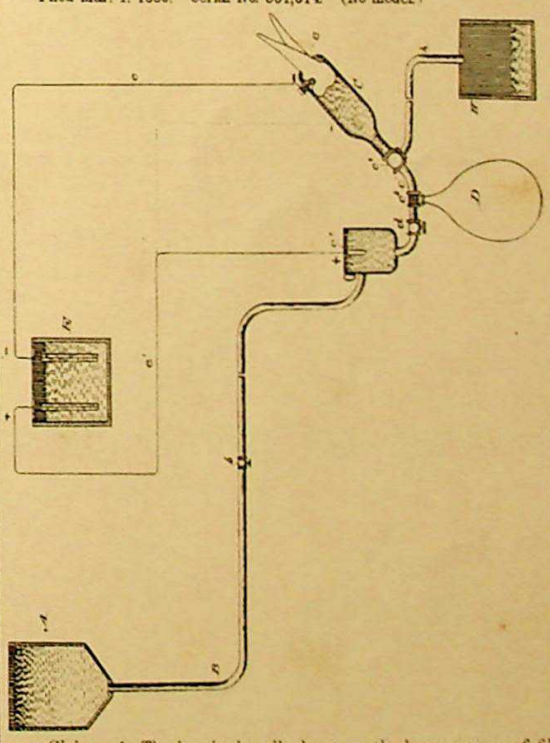
2. The combination of the pump-beam 11, laterally-movable beam

404,744.



13, having pivotal connection therewith at one end by means of bolt 14, and a removable bolt 15, substantially as shown and described.

404,745. METHOD OF FILLING TEETH. ELBERT C. TAYLOR, Humansville, assignor of three-fourths to Willis B. Humphreys and Frank H. Babbs, Stockton, and Alfred W. Mitchell, Humansville, Mo. Filed Mar. 1, 1889. Serial No. 301,614. (No model.)

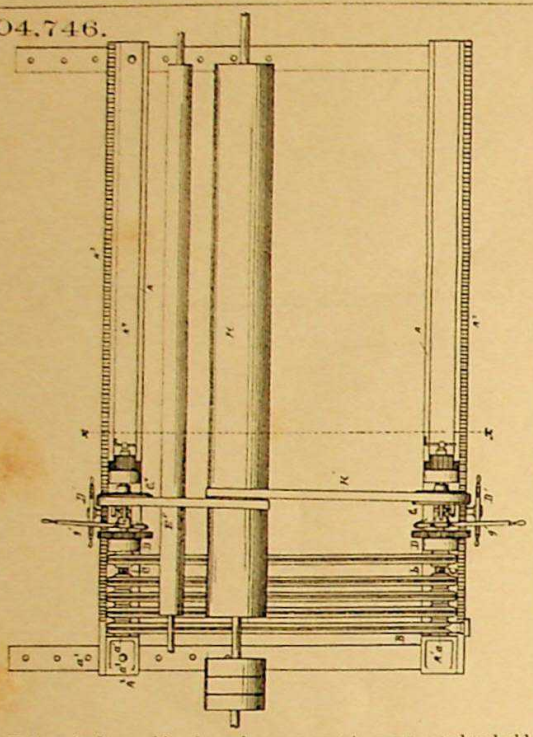


Claim.—1. The herein-described art, method, or process of filling teeth, which consists in electroplating the cavity.

2. The herein-described art, method, or process of filling teeth, which consists in cleaning the cavity, electroplating the walls thereof, then inserting a plug in the cavity, and subsequently filling up the space between the walls of the cavity and the plug and the remainder of the cavity by electro-deposition.

404,746. MACHINE FOR ASSEMBLING RADIATOR-LOOPS. HARRISON H. TAYLOR, Detroit, Mich., assignor, by direct and mesne assignments, to the Michigan Radiator and Iron Manufacturing Company, same place. Filed Apr. 25, 1888. Serial No. 271,807. (No model.)

404,746.



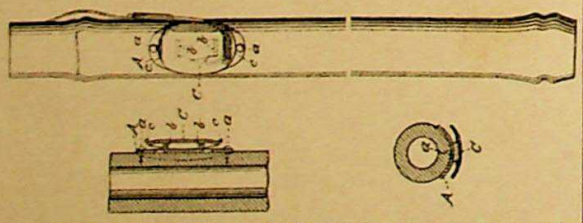
Claim.—1. In combination, a loop-support A, constructed to hold the loops in position, a head-block, a shaft mounted in said head-block carrying a chuck E, projecting beyond the face of the head-block, means for reciprocating the head-block, means to reciprocate the chuck-shaft independently of the head-block, and means to rotate the chuck-shaft, substantially as set forth.

2. In combination, a loop-support A, constructed to hold the loops in position, a sliding head-block D, a shaft mounted therein carrying an expansible chuck E, projecting beyond the face of the head-block, means for rotating said chuck-shaft, and means for reciprocating said chuck-shaft independently of the sliding movement of the head-block, substantially as set forth.

3. In combination, a loop-support consisting of two parallel arms constructed to hold the loops in position, and means for laterally adjusting one of said arms, a head-block having a sliding engagement on one of said arms, means for reciprocating the head-block, a shaft mounted therein carrying a chuck projecting beyond the face of the head-block, means to reciprocate the said chuck independently of the head-block, and means to rotate the chuck, substantially as set forth.

4. In combination, a loop-support A, constructed to hold the loops in position, a head-block D, a shaft mounted therein carrying a chuck E, projecting beyond the face of the head-block, and means to rotate the chuck, substantially as set forth.

404,747. FISH-HOOK GUARD. CHARLES W. TEED, Elmira, N. Y. Filed Oct. 16, 1888. Serial No. 288,199. (No model.)



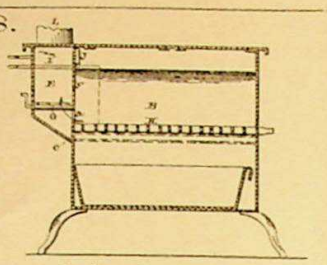
Claim.—1. A fish-hook shield consisting of a concave attachment-plate adapted to be secured to the rod, and having connected thereto a spring top plate C, forming a shield, substantially as specified.

2. The combination, with a fishing-rod, of a hook-shield consisting of the lower plate secured to the rod, and having the integral posts, and the top plate of spring metal adapted to hold the hook between its lateral edge and the lateral edge of the lower plate, substantially as specified.

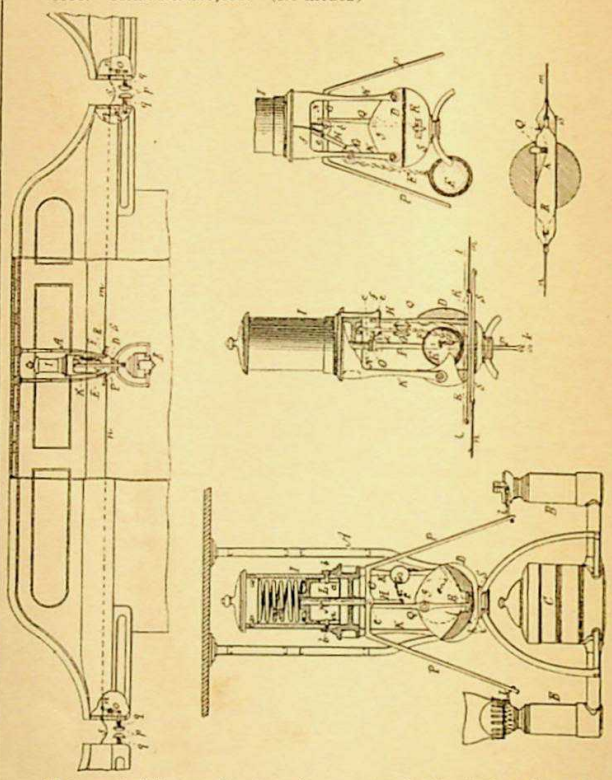
404,748. ATTACHMENT FOR STOVES OR RANGES. CHARLES B. TEFFT, Utica, N. Y. Filed Jan. 29, 1889. Serial No. 297,934. (No model.)

Claim.—In a stove or range, the fire-pot provided with the grate H in its bottom, the garbage-receptacle E, applied to one side of the stove at the end of the fire-pot, the partition F, placed between the fire-pot and receptacle, and provided with the opening *a* above the grate for the products of combustion to pass through and the opening *c* below the grate for the refuse to pass through, the damper I, the grate G, and the stove-pipe, substantially as shown.

404,748.



404,749. MECHANISM FOR EXTINGUISHING THE LIGHTS IN RAILWAY-CARS. ISAIAH N. TILLSON, Whitman, Mass. Filed July 14, 1888. Serial No. 279,953. (No model.)



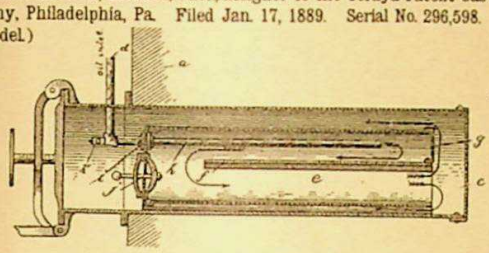
Claim.—1. The mechanism for automatically closing the extinguishers of the lamp-burners of a railway-car, substantially as described, it consisting of the combination of the following elements: the spring-case secured to the lamp-supporting frame, its spring, and the sliding head, to which is connected by a rod the cross-head provided with arms having notches to receive the outer end of the levers of the extinguishers, said cross-head also having a stud *c*, the levers of the extinguishers, the lever Q, fulcrumed to the frame, the arm H, pivoted to the case and having the pin *e* and stud *d*, the spring *f*, for moving the arm H, and the slides R S, provided with inclines for moving the lever Q, the cords or wires *m n*, the former connecting the slides R of each lamp-supporting frame to each other and to a lever *o* at one end of the car, and the latter (the slide S) to each other and to a lever *o* at the other end of the car, the levers *o*, slides *p*, and springs *q*, all as set forth.

2. The mechanism for automatically closing the extinguishers of the lamp-burners of a railway-car, substantially as described, it consisting of the combination of the following elements: the spring-case secured to the lamp-supporting frame, its spring, and the sliding head, to which is connected by a rod the cross-head provided with arms having notches to receive the outer ends of the levers of the extinguishers, the levers of these extinguishers, the arm H, pivoted to the case and connected to the spring *f* for the purpose described, and having the stud *d* to operate with the stud *c* of the cross-head, the chain F, weight E, guide-wheel G, and the bearing for the weight, all as shown and set forth.

3. The mechanism for automatically closing the extinguishers of the lamp-burners of the cars of a railway-train, substantially as described, it consisting of the combination of the following elements: the spring-case secured to each lamp-supporting frame, its spring, and the sliding head to which is connected by a rod the cross-head provided with arms having notches to receive the outer end of the levers of the extinguishers, the levers of these extinguishers, the arm H, piv-

oted to the case and having the pin *e*, connected to the spring *f*, secured to the case, and also the stud *d* to operate with the stud *c* of the cross-head, the lever Q, pivoted to the frame, the slides R S, provided with inclines for moving said lever Q against the pin *c* of the arm H, cords or wires *m n*, connecting the slides, the lever *o*, and lines S, connecting the wire of one car with that of the other, all as shown and set forth.

404,750. APPARATUS FOR THE MANUFACTURE OF GAS. JOSÉ F. TORAYA, Havana, Cuba, assignor to the Toraya Patent Gas Company, Philadelphia, Pa. Filed Jan. 17, 1889. Serial No. 296,598. (No model.)



Claim.—1. An oil-vaporizing cartridge adapted to be removably located in a retort, said cartridge having its front end closed, a vertical longitudinal partition extending a portion of the length of the cartridge, forming two chambers in the same, communicating at their front ends only, a wall closing the portion of the rear end of the cartridge on one side of the partition, the remaining portion being open for the exit of vapor, and an oil-supply pipe extending through the front end of the cartridge and longitudinally through said cartridge almost to said rear end wall, substantially as described.

2. The combination, with a retort, of an oil-vaporizing cartridge removably located within the same and leaving heating spaces and passages between the ends and sides of the retort and cartridge, said cartridge having a partition extending from the rear end a portion of the distance to the front end thereof, the rear end of one of the chambers formed by the partition being closed and the other chamber having a vapor-escape into the retort, and an oil-supply pipe extending into the closed chamber on one side of the partition, substantially as described.

3. The combination, with a closed horizontal retort, of an oil-vaporizing cartridge removably located within the same and leaving heating spaces and passages within the retort for the vapor from the cartridge, said cartridge having an interior vertical partition extending a portion of the length thereof, an oil-supply pipe extending into a portion of the length of the cartridge, and a vapor-exit from the cartridge into the retort, substantially as described.

4. An oil-vaporizing cartridge adapted to be located in a retort, and formed of sheet metal with its front end closed, an interior partition extending from the rear end nearly to the front end of the cartridge, the rear end of the cartridge on one side of the partition being closed, an oil-supply pipe extending into the cartridge and provided with a union at the front end of the cartridge, whereby steam can be introduced into the pipe, and a man-hole in the front end of the cartridge, for the purpose set forth.

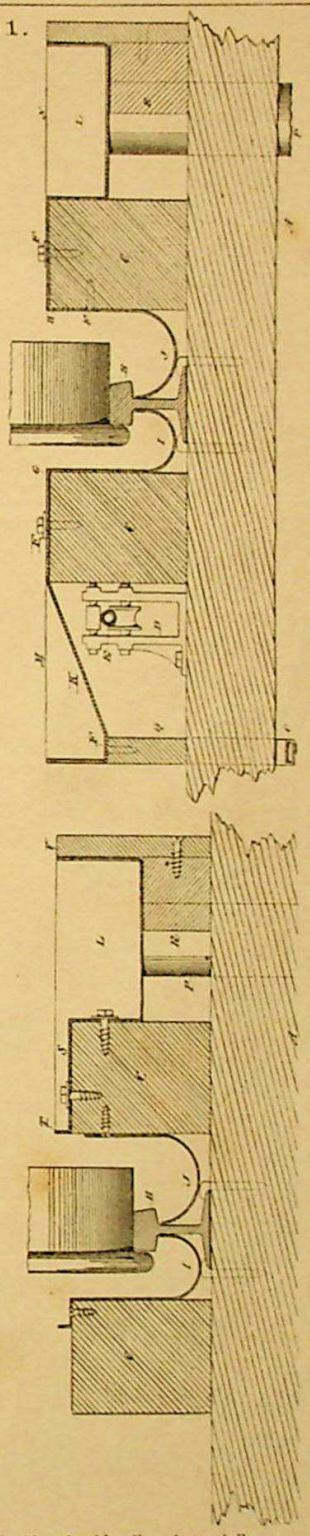
5. A normally-closed retort, in combination with an oil-vaporizing cartridge located therein, having a concaved bottom and of such size as to leave spaces between its sides and the walls of the retort for the passage and heating of the gas from the cartridge, the cartridge having a portion of its rear end open, a fluid-supply pipe extending into the cartridge, and a longitudinal partition in the cartridge extending from one end almost to the other end of the same and located between the discharge end of the fluid-pipe and the vapor-exit from the cartridge, substantially as described.

6. A cartridge for vaporizing oil adapted to be removably placed in a retort and formed of sheet metal with its head normally closed, a partition extending from the rear end of the cartridge a portion of the longitudinal length of the same, the rear end of the cartridge on one side of the partition being closed and the remaining portion open, and an oil-supply pipe extending through the front end of the cartridge and rearwardly within the same almost to the closed end of the cartridge, substantially as described.

404,751. DRIP-PAN FOR ELEVATED RAILROADS. EDWARD A. TRAPP, Brooklyn, N. Y. Filed Mar. 11, 1889. Serial No. 302,850. (No model.)

Claim.—1. For elevated railroads, the guard-rails C upon opposite sides of the steel rails B, combined with drip-pans secured to said guard-rails, and forming gutters I J on each side of the steel rail, said drip-pans being formed of sheet metal, and at their contact with the guard-rails serving to cover the latter, substantially as and for the purpose set forth.

2. In the construction of elevated railroads, the guard-rails C at each side of the steel rail B, combined with sheet-metal drip-pans secured to said guard-rails, and forming receptacles to catch the drippings at each side of said rails, substantially as and for the purposes set forth.



3. In the construction of elevated railroads, the guard-rails C at each side of the steel rails B, combined with sheet-metal drip-pans secured to said guard-rails and forming longitudinal receptacles for drippings from the engine, brakes, and heating appliances, substantially as and for the purposes set forth.

404,752. COVER FOR SEWING-MACHINES. NATHANIEL R. VAN HORN, Toledo, Ohio, assignor to the Union Manufacturing Company, same place. Filed Aug. 17, 1887. Serial No. 247,183. (No model.)

Claim.—1. In a sewing-machine cover, in combination with the continuous piece of bent wood forming the top and the rear and front sides of the cover, the end pieces fastened to said bent piece, and reenforcing and strengthening panels superimposed upon the top, front sides, and ends of the cover, so as to aid in preserving the shape thereof, substantially as and for the purpose specified.

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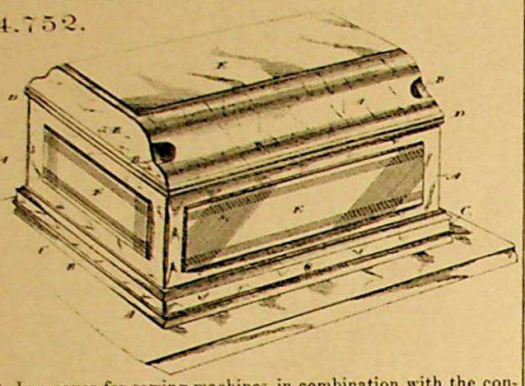
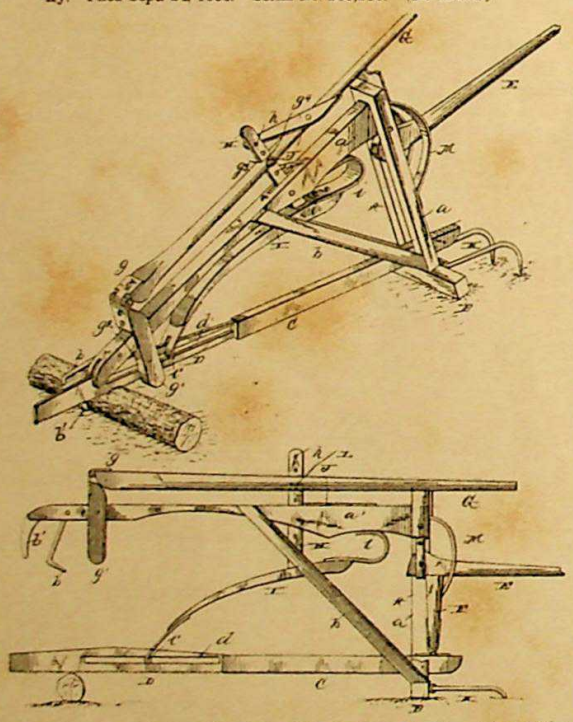


2. In a cover for sewing-machines, in combination with the continuous piece of wood bent to form the top, front, and rear sides of the cover, with straight or plane surfaces, the end piece fastened to said bent piece, panels superimposed upon the end pieces and the straight or plane surfaces of the front and top of the cover, so as to strengthen and preserve the shape thereof, and a molding fastened to and extending around the lower portions of the cover, so as to define and preserve its shape, substantially as described.

3. The combination of the bent-wood piece which constitutes the front, top, and rear sides, the separately-formed end pieces, the re-enforcing and strengthening panels, the molding which extends horizontally around the lower part of said cover, and the horizontal molding that is secured to and extends around the upper part of the same, substantially as and for the purpose shown and described.

404,753. HAND-POWER SAW. JAMES M. VAUGHN, Water Valley, Ky. Filed Sept. 24, 1888. Serial No. 286,218. (No model.)



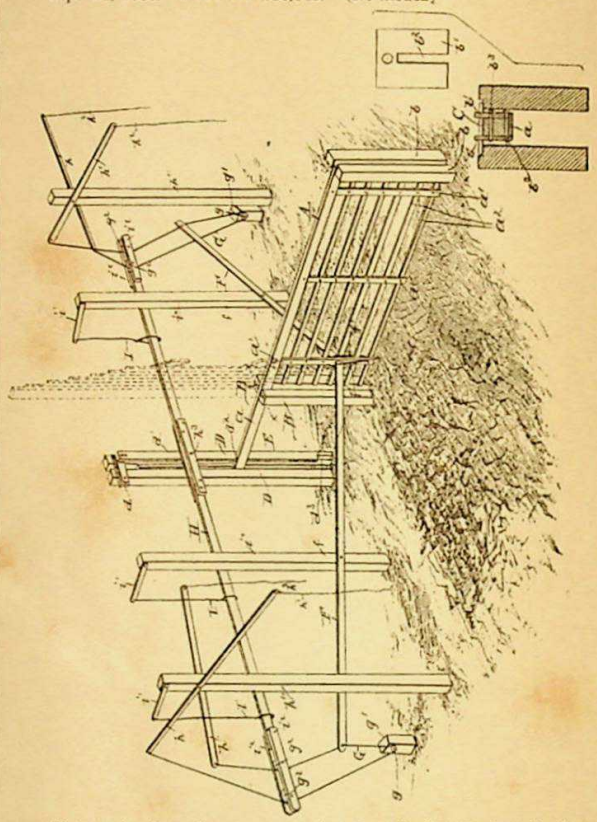
Claim.—1. The combination, with the frame having a lever pivoted thereto for operating the saw, of the arm I, the spring at its upper end connecting it with the arm a', and its lower end being provided with a movable pivot, and the saw provided with the slot d' in the top of its blade, in which the movable pivot at the lower end of said arm I operates to permit the saw to be both reciprocated and raised when necessary, substantially as specified.

2. The combination, with the supporting-frame having the arm a', and the slotted saw-blade connected to the movable arm C, of the bar H, passing through a slot in the arm a', the arm I, connected to the lower end of the bar H, and connected to the arm a' by the curved spring i and to the slotted saw-blade by the movable pivot i', and the lever G, for imparting pressure to the saw, substantially as specified.

3. In a sawing-machine, the combination, with the arm a' and the lever G, having hook J secured thereto and adapted to engage the openings h in the bar H, of the bar I, connected with the arm a' and with the slotted saw-blade, and connected also with the perforated bar H above the arm a', substantially as specified.

4. In a sawing-machine, the combination, with the supporting-frame provided with the arm a', and the movable arm C, provided with the slotted saw-blade, of the connecting-arm having the spring i at its upper end and the pivot i' at its lower end, the guides M, and the lever E, provided at its inner end with the downwardly-extending arm F, having at its lower end a hinge, one leaf being attached to the arm F and the other leaf to the arm C, whereby, when the lever E is moved up and down, a reciprocating motion is imparted to the saw-blade, substantially as specified.

404,754. GATE. JOSEPH WALKER, near Manchester, Va. Filed Sept. 21, 1888. Serial No. 286,045. (No model.)



Claim.—1. As an improvement in gates, the herein-described gate having the upper pivoted right-angular beam, the posts between which said beam operates, and the gravity-latch pivotally secured to one of said posts and having grooves or recesses engaging said beam, substantially as set forth.

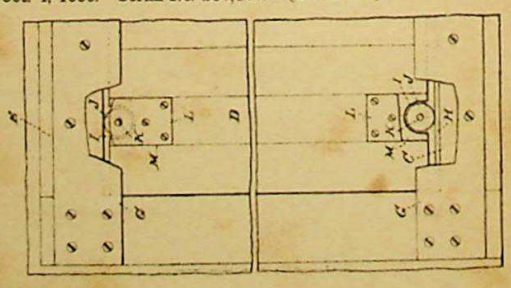
2. The gate having the upper pivoted beam, the posts D D, between which said beam operates, the pivoted gravity-latch secured to one of said posts, and the latch-operating bar pivotally secured to said latch and loosely supported in position, substantially as described.

3. The gate having the pivoted beam, the posts D D, between which said beam operates, the latch pivotally secured to one of said posts, the operating-bar pivotally secured thereto, and the ropes or chains for operating said bar, substantially as described.

4. The gate having the pivoted beam, the posts D D, between which said beam operates, the levers F F, secured to said gate at their inner ends, the gravity-latch pivoted to one of said posts, the operating-bar pivoted to said latch, the levers h h', and the ropes or chains connected to said latter levers and the levers F F, substantially as described.

5. The combination, with the gate having the pivoted beam and the posts D D, between which said beam operates, of the latch pivoted to one of said posts, the operating-bar pivoted to said latch, the guide-loops for supporting said bar, and the means for operating the latter at its outer ends, substantially as set forth.

404,755. CAR-DOOR. CHARLES L. WARD, Cavendish, Vt. Filed Oct. 4, 1888. Serial No. 287,177. (No model.)



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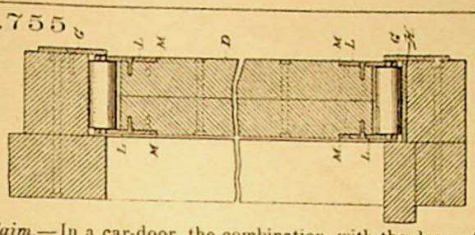
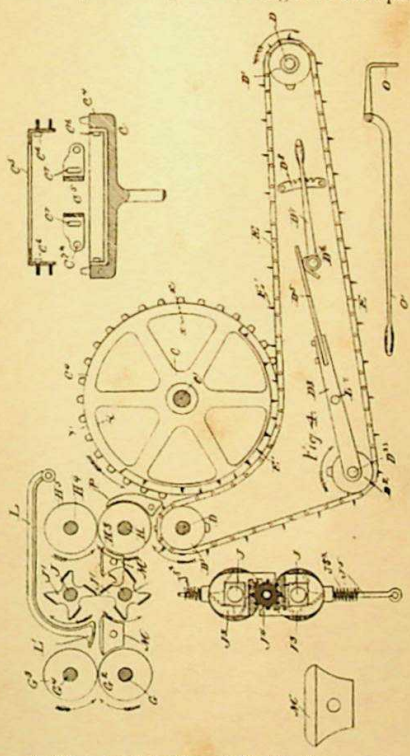


Claim.—In a car-door, the combination, with the door, of bearing-plates seated in recesses in the door, rollers arranged in transverse recesses in the top and bottom edges of the door, journaled in the bearing-plates, and projecting beyond the edges of the door, the guideways applied to the car-body, having outer flanges projecting toward each other and lapping the outer roller bearing-plates, and a plate secured to the upper bearing-surface of the lower guideway, substantially as set forth.

404,756. MACHINE FOR SCRAPING THE PULP, &c., FROM FIBROUS PLANTS. RANDOLPH G. WARD, Baltimore, Md. Filed Feb. 15, 1888. Serial No. 264,061. (No model.)

Brief.—After being aligned by a gate at the lower end of the feed-trough, the leaves pass between crushing-rollers driven by eccentric gears upon their shafts, thence between separated rotary scrapers to holding-rolls, and thence between a scraping-cylinder and a scraping-chain. As soon as the forward ends of the leaves are seized by the holding-rolls the scraping-cylinders are brought together by rack-and-pinion gearing and a lever and scrape the leaves in a backward direction. The forward ends are scraped by the cylinder and chain. The material is thus scraped throughout its length at one operation.



Claim.—1. The combination of feed-rolls, scrapers, means for rotating said scrapers in a direction opposite to that in which material is fed to the same, feeding and holding rolls arranged beyond the scrapers in the line of feed, and rotating in a direction opposite to that of the scrapers, and scraping mechanism arranged beyond the feeding and holding rolls, substantially as specified.

2. Feeding-rolls, in combination with eccentrically-mounted gears connected with the rolls for operating the same.

3. Feeding-rolls, in combination with eccentrically-mounted gears connected with the rolls, and means for operating said gears, substantially as specified.

4. Rotary scrapers or cutters, means for rotating the said scrapers to scrape the material in a direction opposite to its travel in the machine and feeding and holding rolls, in combination with mechanism, substantially as described, for separating said scrapers at will, substantially as specified.

5. Feed-rolls having relatively variable surface speeds, in combination with rotary scrapers, and gearing, substantially as described, attached to said feed-rolls and scrapers for rotating the same in opposite directions.

6. Feed-rolls, eccentric gears operatively connected therewith, and mechanism, substantially as described, for driving said gears, in combination with rotary scrapers and gearing for driving said scrapers in a direction opposite to that of the travel of the material upon which they operate, and feeding and holding rolls, substantially as specified.

7. The combination of feeding-rolls, eccentric gearing attached to the same, as described, rotary scrapers, gearing to rotate the same in a direction opposite to that of the passage of the material, rolls arranged in advance of the scrapers in the direction of the movement of the material, scraping mechanism arranged in advance of said feeding and holding rolls, and mechanism for actuating the holding-rolls and the gearing of the feed-rolls, substantially as described.

8. Rotary scrapers or cutters, in combination with gearing for rotating the same continuously in a direction opposite to that of the material passing therebetween, feeding and crushing rolls arranged in advance of the cutters, holding-rolls arranged beyond said cutters, and a pivoted guard arranged over the cutters or scrapers and resting upon the material in advance of the cutters, substantially as described.

9. The scraping rolls or cutters J', working continuously in the direction specified, and provided with movable rack-bearings J^3, in combination with the pinion $J^{4\times}$, springs J^5, rods J^6, lever J^4, and means for actuating said scraping rolls or cutters, substantially as specified.

10. The combination of the scraping-cylinder C, the scraping-chain E, the tightener D^2 D^3, the eccentric shaft D^6, the lever D^7, and the lever-holding device, substantially as described.

11. The combination, with the cylinder C, of the scraper C^3, slotted, as at C^7, and pivoted, as at C^{7*}, and with scraper-adjusting bolts C^6, substantially as specified.

12. The combination, with feeding and scraping rolls, means for operating the same, and the scraping-cylinder and scraping-chain, of intermediate gearing, and means, substantially as described, for adjusting the same, whereby the desired speed of motion is communicated from the cylinder to the gearing which operates said scraping-rolls and said feeding-rolls, substantially as specified.

13. Feeding-rolls and a system of gearing for driving the same, comprising a shaft and driving-pulley, and means for adjusting said pulley, in combination with a positively-driven shaft bearing a disk C^3, arranged adjacent to said adjustable pulley, whereby varied speeds with relation to that of the positively-operating shaft may be given to the feed-rolls, substantially as specified.

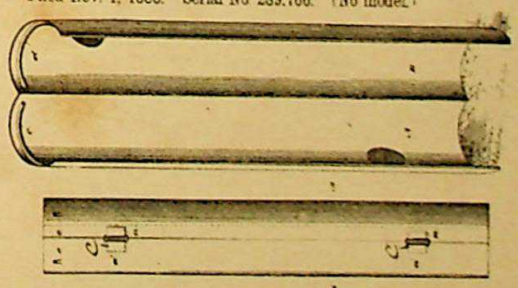
14. The combination of the disk C^3, the pulley F^4, nuts F^5, and the threaded and slotted shaft F, substantially as specified.

15. The guard L L', tables M M', the cutters J', feed-rolls H^2 H^3, rolls G^2 G^3, and the guard-piece, substantially as and for the purpose specified.

16. Separable scraping or cutting rolls, as J', the vertical shaft K, having wide-faced spiral gears K^2, intermeshing gears mounted on the cutter-shafts, and means, substantially as described, for effecting the separation of the scraping-rolls.

17. The combination of the spiral gears K^2, the shaft K, the gears J^2, and cutter-shafts J, substantially as specified.

404,757. TREE-PROTECTOR. HIRAM L. WEBBER, Stafford, Kans. Filed Nov. 1, 1888. Serial No. 289,766. (No model.)



Claim.—1. In a tree or plant protector, the combination of two metallic sections curved or bent from different centers, so that when the sections are placed edge to edge they will overlap and form tight joints, and hinges for connecting said sections, one series of the leaves thereof being located at the edge of one of the sections and the opposite leaves of the hinges being placed at a distance from the adjacent edge of the opposite section, substantially as shown, and for the purpose set forth.

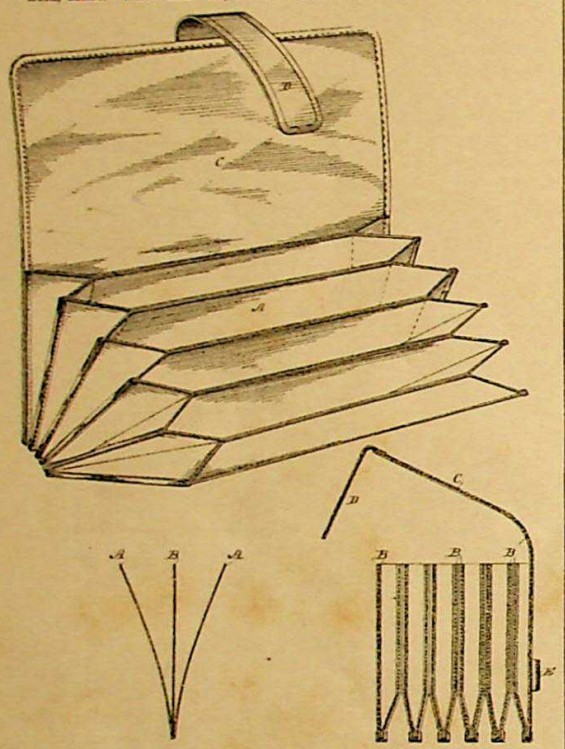
2. As an improved article of manufacture, a tree or plant protector made up of two longitudinal sheet-metal sections bent to form curved sections, one of said sections being of a greater curve than the other section, the sections being hinged to each other, the leaves of said hinges being secured to the outer edge of the larger curved section, the opposite leaves being secured at a distance from the edge of the smaller section, substantially as shown, whereby the sections may be opened to a greater distance than the diameter of the sections, and

when closed will form tight joints between the edges and will be retained in a closed position by the pressure of the free edges of the sections upon each other.

3. In a tree or plant protector, the combination of the sheet-metal sections A B, having struck-up metal prongs formed integral therewith for holding in place flexible tubes or packing, substantially as set forth.

4. In combination with a tree or plant protector having the body portion made up of sheet metal, flexible rubber tubes attached near the inner upper edges thereof and held removably in place by metal prongs formed integral with the body portion, substantially as shown, and for the purpose set forth.

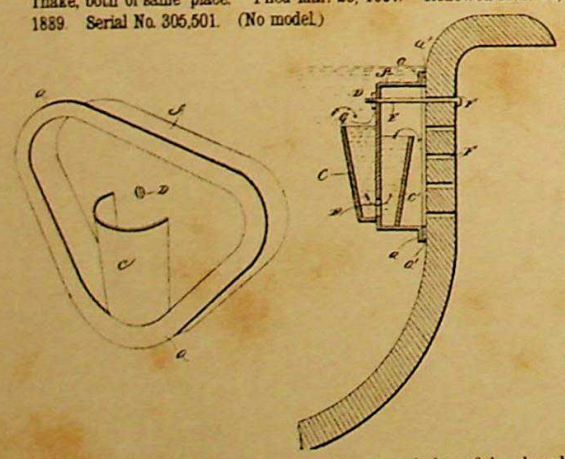
404,758. POCKET OR NOTE BOOK. EMIL WEISSBROD, Greenfield, Mass. Filed Mar. 20, 1889. Serial No. 303,972. (No model.)



Claim.—1. A pocket or note book provided with one or more apartments made up of outside and dividing walls, said walls being composed of one or more thicknesses of combustible material and a sheet of asbestus or other non-combustible material, as and for the purpose specified.

2. The combination, with a pocket or note book provided with one or more apartments made up of outside and inside double walls, of the asbestus sheets inclosed within said walls, as and for the purpose set forth.

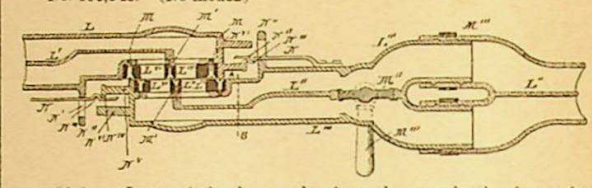
404,759. WATER-SEAL OVERFLOW-TRAP. EPHRAIM J. WHITLOCK, Brooklyn, N. Y., assignor of two-thirds to Iles E. Byrnes and John Thake, both of same place. Filed Mar. 28, 1887. Renewed Mar. 30, 1889. Serial No. 305,501. (No model.)



Claim.—1. The trap for overflow-openings, consisting of the closed box A, secured directly to the side of the basin over the said openings, and the wells or receptacles C and C′, arranged on reverse sides of the face-plate of the box A and connected by an opening B in said face-plate, the well C′ being situated within and covered by the said box and the well C opening into the basin direct, substantially as described.

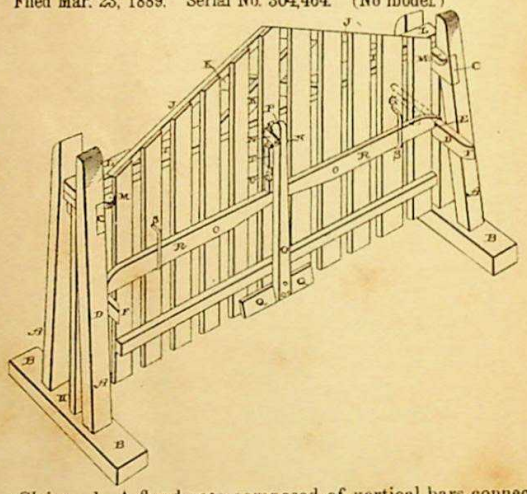
2. In a trap for overflow-openings, the combination of the closed box A, having the flanges *a*, the bolt E, secured in one of the overflow-openings at one end and to the box A at its other end, the receptacle or well C, arranged on the outer face of the box A and opening directly into the basin, the receptacle or well C′, entirely inclosed by the box A and connected to the receptacle C by means of an opening B, formed in the lower portion of the face-plate of the box A, and the rubber gasket *a*′, substantially as described.

404,760. COUPLER FOR AIR-BRAKE MECHANISM ON RAILWAY-CARS. ANDREW J. WISNER, Philadelphia, Pa., assignor of one-half to Marcus F. Richardson, same place. Filed Jan. 12, 1886. Serial No. 188,348. (No model.)



Claim.—In an air-brake mechanism, the coupler having a single joint, substantially as described, with a longitudinally central dividing-wall L′ L″, with packing L^{IV} L^{VI} to maintain the integrity of the division, whereby two separate air-currents can be maintained through a single coupler and the branches O″ O″ from each air-division, whereby these currents may be carried through the intermediary of flexible hose to separate air-pipes beneath the cars, substantially as described.

404,761. FLOOD-GATE. HENRY A. WRIGHT, Spring Garden, Mo. Filed Mar. 23, 1889. Serial No. 304,464. (No model.)



Claim.—1. A flood-gate composed of vertical bars connected at their lower ends by a cross-bar, and their upper ends secured to the edge of a flat supporting and pivotal timber, in combination with suitable supporting-posts, whereby the supporting-timber when the gate is open will be approximately upon its edge, for the purpose described.

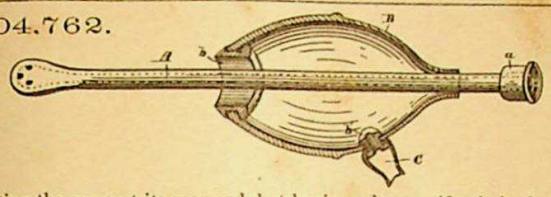
2. The combination, with a flood-gate, of the flat supporting and pivotal beam I, the posts A, bars C, flat upon their upper surfaces, and the transverse guiding-bars M, secured to the under side of the beam I near its ends, for guiding the gate and preventing endwise movement thereof when the gate is open, substantially as shown.

3. In a flood-gate, the combination of the gate, the latches pivoted thereto, the supporting-posts upon which the gate is pivoted, the operating-lever provided with a block at its lower end and a projection or cam at its upper end, the bracket secured to the gate near its upper end, between which the upper end of the lever is pivoted, and a vertically-sliding rod having its upper end beveled away to coact with the upper end of the lever, and a guiding-loop passed around it and secured to the gate, the lower end of the vertical sliding rod engaging the inner ends of the latches, whereby, when the lower end of the lever is acted upon by the water, the outer ends of the latches are raised, substantially as specified.

404,762. VAGINAL SYRINGE. OTTO G. ZERSE and SILAS T. YOUNT, Lafayette, Ind. Filed Sept. 24, 1888. Serial No. 286,254. (No model.)

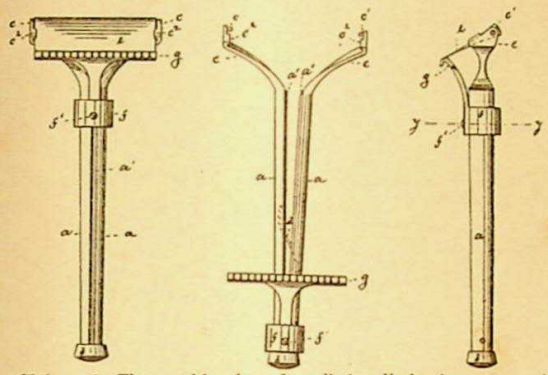
Claim.—The herein-described vaginal irrigator, consisting of a syringe, an injecting-tube A, enlarged and perforated in its front end, and having an enlarged screw-threaded flange *b* at its rear to connect with the syringe-tube, with the drainage-bulb B on said tube tightly

404,762.



fitting the same at its rear end, but having a large orifice in its front end, the hard grooved annulus *b*, fitting in and distending the front orifice of the bulb, and the drainage-tube C, connected to bulb B, all substantially as and for the purpose specified.

404,763. RAZOR. FRIEDRICH ASCHEUER, New York, N. Y., assignor to the Electric Cutlery Company, same place. Filed Feb. 12, 1889. Serial No. 299,577. (Model.)

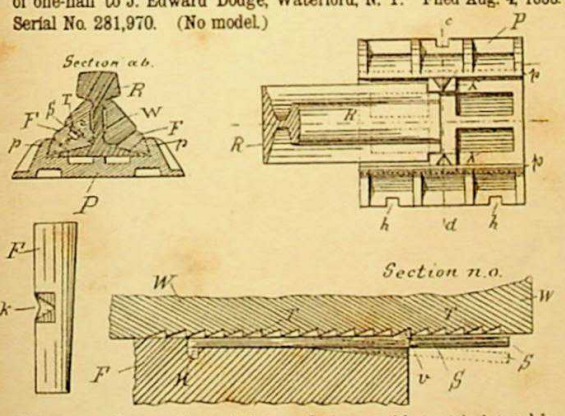


Claim.—1. The combination of a split handle having arms *c* with a surrounding ring *f* and guard *g* secured thereto, and with a blade adapted to be engaged by arms *c*, substantially as specified.

2. The combination of a split handle having arms *c* and pins *c'* with spring *d*, ring *f*, guard *g*, and blade *e*, having holes *e'*, substantially as specified.

3. The combination of split handle having groove *a'* and arms *c* with spring *d*, blade *e*, ring *f*, and guard *g*, the ring *f* having pin *f''*, substantially as specified.

404,764. RAIL-JOINT. DWIGHT R. ATKINSON, Albany, assignor of one-half to J. Edward Dodge, Waterford, N. Y. Filed Aug. 4, 1888. Serial No. 281,970. (No model.)



Claim.—1. In a railway-joint, a chair provided with lateral inwardly-projecting flanges and bosses placed on each side of the upper surface of the chair, provided with a lower portion square in form and an upper portion V-shaped, substantially as described, and for the purpose set forth.

2. In a railway-joint, the combination of a triangular wedge-shaped bar provided with a groove and notch, into which is placed a key-bar provided with a latch-catch, with a wedge provided with a series of notches, with which the latch-catch engages, all substantially as described, and for the purpose set forth.

3. In a railway-joint, the combination, with a chair provided with lateral inwardly-projecting flanges, of triangular wedge-shaped bars placed in contact with the foot of the rails on both sides, and also in contact with the chair-flanges, and wedges in contact with the under sides of the rail-heads, and also in contact with said bars, substantially as described.

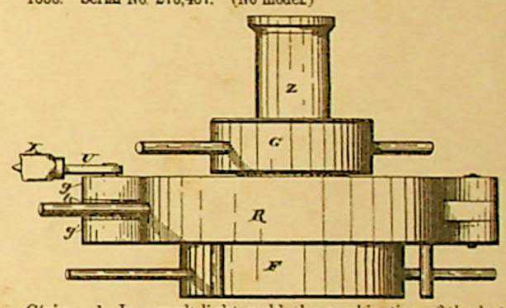
4. In a railway-joint, the combination, with a chair provided with lateral inwardly-projecting flanges, of triangular wedge-shaped bars placed in contact with the foot of the rails on both sides, and also in contact with the chair-flanges, and wedges located in contact with the rail-webs and under sides of the rail-heads, and also in contact with said bars, substantially as described.

5. In a railway-joint, the combination of a chair provided with an inwardly-projecting flange and a boss projecting inward from said flange, said boss having a lowered squared portion to fit recesses in the adjacent ends of the rails and provided with an upper inwardly-projecting V-shaped portion, a triangular wedge-shaped bar having a notch to fit the V-shaped portion of said boss, said bar being placed upon the foot of each rail and in contact with the chair-flange, and a wedge driven in contact with the under side of the head of each rail, and also in contact with said bar, substantially as described.

6. In a railway-joint, the combination of a chair provided with lateral inwardly-projecting flanges and bosses projecting inwardly from said flanges, said bosses each having a lower squared portion and an upper inwardly-projecting V-shaped portion, the rails having recessed ends to fit the squared portions of said bosses, triangular wedge-shaped bars notched to fit said bosses and placed upon the foot of each rail on both sides and in contact with the chair-flanges, and wedges driven in contact with said rails and bars on both sides, substantially as described.

7. In a railway-joint, the combination of a chair provided on both sides with inwardly-projecting flanges, triangular wedge-shaped bars resting on the rail-feet in contact with the chair-flanges and provided on their inner sides with key-latches, and wedges driven in contact with said rails and bars on both sides of the rails, and provided with notches to engage the key-latches, substantially as described.

404,765. MOLD FOR VAULT-LIGHTS. DAVID BARKER, Canton, Ohio, assignor to the Canton Glass Company, same place. Filed June 8, 1888. Serial No. 276,487. (No model.)

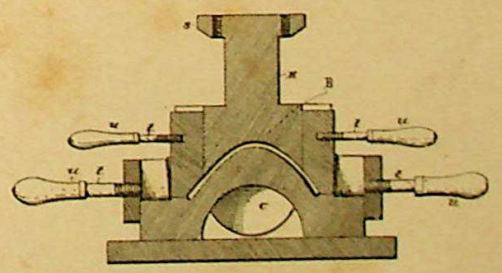


Claim.—1. In a vault-light mold, the combination of the bottom part A, having a series of perforations B, an annular peripheral rib D, recess H, and a bottom plate I, having a series of plungers J secured thereto and adapted to enter the perforations B, said plungers cut away at the upper portion to a line of angularity of about forty-five degrees from a line drawn vertically through the center of the plungers, substantially as described, and for the purpose set forth.

2. In a vault-light mold, a top portion G, having a series of depressions K, a central fount, as O, and communicating sprues P, and an annular rib Q, substantially as described, and for the purpose set forth.

3. The combination of the bottom portion A, having a series of perforations B, recess H, plate I, plungers J, annular ring D, a top portion G, having depressions K, sprues P, fount O, annular peripheral rib Q, plungers Z, and locking-clasp R, substantially as described, and for the purpose set forth.

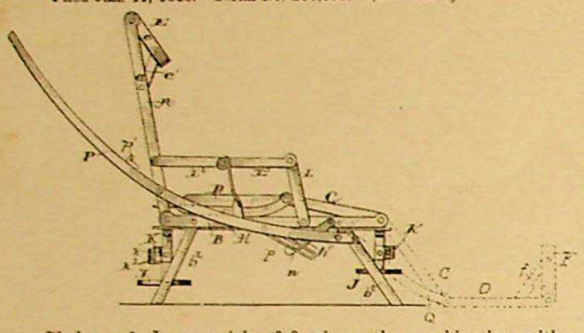
404,766. MOLD FOR MAKING GLASS PADS FOR HORSE-COLLARS. DAVID BARKER, Canton, Ohio. Filed Nov. 16, 1888. Serial No. 291,000. (No model.)



Claim.—1. The combination, with a mold for forming glass pads for horse-collars, as herein described, of the pins *n*, to form the apertures *m* in the pad, said pins having studs *p* secured therein, and drum C, pivotally secured to the body portion of said mold, having slots *i* to engage the studs *p*, whereby the pins *n* may be moved into and out of said mold, substantially as described, and for the purpose set forth.

2. The combination, with a mold for making glass pads for horse-collars, of pins having a sliding movement through the walls of said mold and through the said glass pad, and a rotatable drum having oblique guides which are engaged with said pins for the purpose of actuating the same, substantially as set forth.

404,767. CONVERTIBLE CHAIR. ABRAM BOTKIN, Wilmington, Del., assignor of one-tenth to Carpel Udelewitz, Washington, D. C. Filed Jan. 11, 1889. Serial No. 296,053. (No model.)



Claim.—1. In an article of furniture, the combination, with a main body composed of a series of four sections joined together by hinge-connections, of supports for one of the intermediate sections, and folding wheeled supports attached to said section and adapted be drawn out and made to engage and support the end sections, substantially as described.

2. In an article of furniture, the combination, with a section corresponding to a chair-seat, a section corresponding to the back of a chair, and supports for said seat-section, of a section or sections pivoted to said seat-section and adapted to fold upon the same, arms attached to said seat and back sections, and braces for supporting said supplemental section or sections in a vertical position engaging said arms and forming a continuation of the same, substantially as described.

3. In an article of furniture, the combination, with a section answering to the seat of a chair, a section answering to the back of a chair, and a supplemental section or sections pivoted to said seat-section and adapted to fold upon the same, of folding supports for said seat-section, folding wheeled supports adapted to be unfolded and made to support said section, and a brace for maintaining said supplemental section or sections in an upright position when desired, substantially as described.

4. In an article of furniture, the combination, with a section corresponding to the seat of a chair, a section corresponding to the back of a chair, supports for said seat-section, and rockers connected to said seat-section and adapted to engage said supports, of a supplemental section or sections pivoted to said seat-section and adapted to fold upon the same, arms for said seat-section, and braces pivoted to said supplemental section or sections engaging said arms and forming continuations of the same for supporting said supplemental section or sections in a vertical position, substantially as described.

5. In an article of furniture, the combination, with a section answering to the seat of a chair, a section corresponding to the back of a chair, and a supplemental section or sections adapted to fold upon said seat-section and pivoted to the same, of supports for said seat-section, slides connected to said seat-section, and a folding support connected to said slides and adapted to be drawn out and made to support said supplemental section or sections, substantially as described.

6. An article of furniture consisting of a section answering to the seat of a chair, a section answering to the back of a chair, supports for said seat-section, and rockers each connected to said seat-section at two points by a slotted-link construction and adapted to receive the supports for the seat-section, substantially as described.

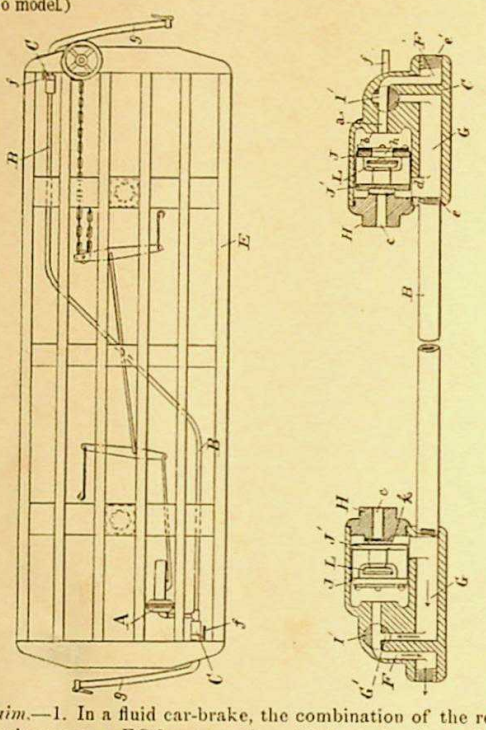
7. An article of furniture having a section corresponding to the seat of a chair and a section corresponding to the back of a chair, folding supports for said seat-section, and hinged standards connected to said seat-section and adapted to fold transversely thereof and provided with wheels, whereby said standards may be folded and the chair supported by the folding supports, or said standards and wheels may be unfolded and made to support the seat-section, substantially as described.

8. An article of furniture comprising four sections joined by hinge-connections, supports for one of the intermediate sections, slides connected to said supported section-wheels, and folding wheel-supports mounted on said slides, whereby said wheels can be extended, unfolded, and made to engage and support the outer sections, substantially as described.

9. In an article of furniture, the combination, with a section corresponding to the seat of a chair and a section corresponding to the back of a chair and pivoted to said seat-section, of a folding arm for said seat-section comprising a horizonal portion pivoted to the back-section and a vertical portion pivoted to the seat-section and to the horizontal portion, said horizontal portion consisting of two parts pivotally connected, and a brace pivoted to said seat-section and engaging the horizontal portion of said arm, substantially as described.

10. In an article of furniture, the combination, with the main body, which consists of four sections joined by hinge-connections and adapted to fold, as described, of the upholstering for said main body formed in sections and adapted to fold in a manner similar to that of the body-sections, one of the intermediate sections being provided with a supplemental portion on one or both sides of the same, substantially as described.

404,768. RELEASE-VALVE FOR AIR-BRAKES. GEORGE A. BOYDEN, Baltimore, Md., assignor to The Boyden Power Brake Company of Baltimore City, of Maryland. Filed Aug. 15, 1887. Serial No. 246,950 (No model.)

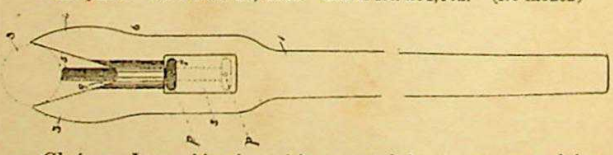


Claim.—1. In a fluid car-brake, the combination of the release-valve having passages F G for connection with the train-pipe, and a cock I′, controlling said passages, whereby to make the valve operative or inoperative.

2. In a fluid car-brake, the combination of the train-pipe B on the car, an expansible chamber, two air-release valves, one on each side of the expansible chamber, and the cocks I′, arranged to make either valve operative or inoperative.

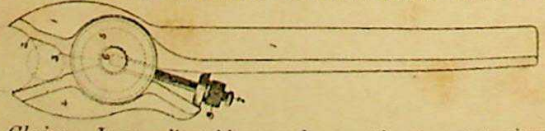
3. In a fluid car-brake, the combination of the train-pipe having its terminals at opposite ends of the car, two air-release valves on the train-pipe between the said terminals, and the cocks, for the purpose set forth.

404,769. WRENCH. EDWARD S. BOYNTON, New York, N. Y., assignor to the Campbell Printing Press and Manufacturing Company, same place. Filed Nov. 26, 1888. Serial No. 291,872. (No model.)



Claim.—In combination with a wrench having a serrated jaw and an opposite plain jaw, forming a wedge-shaped opening between them, as 1, 3, and 4, an adjustable stop in the angle between the jaws, whereby said stop may be adjusted to any given diameter of object to be operated on, so as to permit of said object sliding on said smooth jaw until securely grasped by the teeth of the serrated jaw, and at that point to arrest the same from any further entrance into the angle of said jaws, thereby avoiding danger of the same being crushed, as set forth.

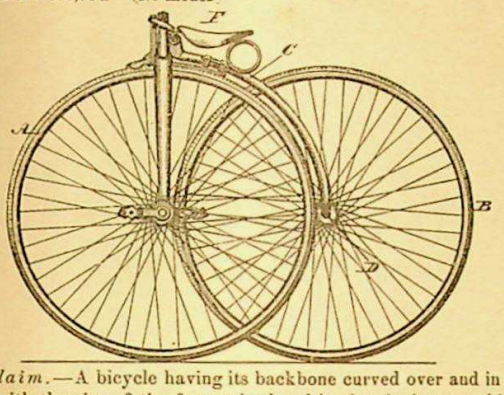
404,770. PIPE-WRENCH. EDWARD S. BOYNTON, New York, N. Y., assignor to the Campbell Printing Press and Manufacturing Company, same place. Filed Nov. 26, 1888. Serial No. 291,873. (No model.)



Claim.—In an adjustable wrench operating to rotate pipes or rods by means of a wedge-shaped opening on what is known as the

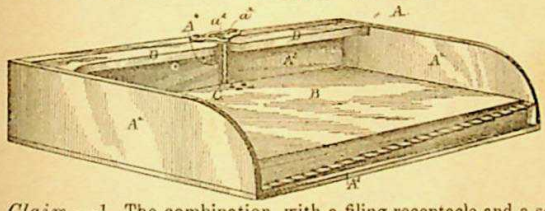
"alligator" principle, the combination of a toothed or serrated jaw on one side of the angular opening, and a smooth jaw on the other side containing one or more steps or stops, as 2 3, whereby the opening between the jaws may be so adjusted that a firm hold is taken by the toothed jaw and flattening or crushing of the pipe or rod avoided, substantially as set forth.

404,771. BICYCLE. JOSEPH F. BREUX, Vineland, assignor of one-half to William H. Grosscup, Camden, N. J. Filed Feb. 18, 1889. Serial No. 300,334. (No model.)



Claim.—A bicycle having its backbone curved over and in the plane with the rim of the front wheel and having its lower end bent at substantially a right angle thereto, the rear wheel of substantially the same size as the front wheel and mounted on said bent end, and a saddle directly over the rim of the front wheel, said parts being combined substantially as and for the purpose set forth.

404,772. FILING-RECEPTACLE. AARON L. BROWN, Chicago, Ill. Filed Nov. 19, 1886. Serial No. 219,388. (No model.)



Claim.—1. The combination, with a filing-receptacle and a series of index-sheets, of a branched retaining post or rod having a part for detachable engagement with the index-sheets and laterally-projecting parts for engagement with the receptacle, substantially as described.

2. The combination, with a receptacle having a sectionally-T-shaped groove in its back wall, of a retaining-rod having laterally-extending parts engaging the wings of the T-groove, substantially as described.

3. The combination, with a receptacle having a sectionally-T-shaped groove in its back wall, of a retaining post or rod having a part engaged with the index-sheets and laterally-extending parts engaging the wings of the T-groove, substantially as described.

4. The combination, with the receptacle having a vertical groove or recess in its back wall and a recess *a* in its bottom and a series of apertured index-sheets, of a branched retaining-rod C, fitted at its rear side to rest against the walls of the groove, and provided with a part *c*, engaged with the aperture of the index-sheets, and constructed to engage the recess *a* at its lower and free end, and means constructed to retain the rod within the groove, substantially as and for the purpose set forth.

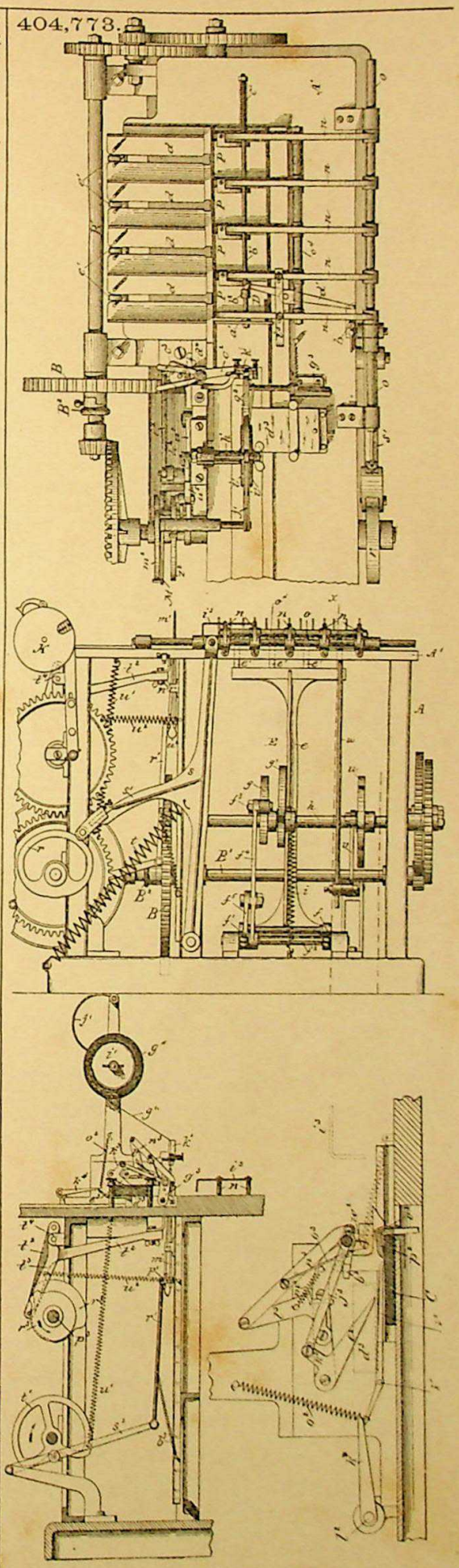
5. The combination, with a receptacle having a sectionally-T-shaped groove A^4, and provided with a recess *a* in its bottom, and a series of index-sheets, of a retaining-rod C, constructed to engage the wings of the T-groove and the said recess, and means for holding the rod in the groove, substantially as described.

6. The combination, with a receptacle having a T-groove in its back wall, and a series of index-sheets, of a rod C, having a part *c*, engaged with the index-sheets, and two laterally-separated parallel parts *c'*, connected with the part *c* at their upper ends and constructed to engage the recesses or wings of the T-groove, and means constructed to retain the said rod within the groove, substantially as described.

404,773. MACHINE FOR PACKAGING POSTAL-CARDS. WILLIAM H. BUNCE, Jersey City, N. J., and DWIGHT SLATE and JAMES RODDA, Hartford, Conn., assignors to Calvin C. Woolworth and Jno. S. Graham, New York, N. Y. Filed Mar. 13, 1886. Renewed Sept. 21, 1888. Serial No. 286,014. (No model.)

Claim.—1. In combination, the pockets *d* and the pocket-clearing device E, having the forward, downward, backward, and upward motions, all substantially as described, and for the purpose set forth

404,773.



2. The lateral feeding device composed of pivoted arms n, having the leftward, upward, rightward, and downward motions, as described, in combination with the independent pusher a', actuated by lever d' and stop b, all substantially as described, and for the purpose set forth.

3. The pivotally-hung and vertically-reciprocating folding-finger p^2, in combination with its actuating-spring v^2, substantially as described, and for the purpose set forth.

4. In combination with the pivotally-hung and vertically-reciprocating folding-finger p^2, the reciprocating presser-lever w^2, all substantially as described, and for the purpose set forth.

5. In combination, pockets d, clearing device e, lateral feeding device n, pusher a', tape-guide k', grasping-pinchers m' m', and shears c^2 c^2, all substantially as described, and for the purpose set forth.

6. In combination, in a machine of the within-described class, a receiving-pocket with slotted bottom, the pocket-clearing lever, and the mechanism, substantially as described, whereby the said pocket-clearing lever is given an intermittent reciprocation along the pocket alternately in and out of it, all substantially as described.

7. In combination with package-holding mechanism, substantially as set forth, the lever bearing the folding-finger and pivotally supported on a second lever, and the mechanism whereby the folding-finger is lifted from the end of the tape after it has been gummed and the package bound, all substantially as described.

8. The herein-described tape-feed mechanism, comprising a pair of pinchers consisting of levers m' m', pivoted upon a reciprocating slide, the said levers being provided with cam-surfaces w', pins v', and a spring to hold the clamping ends separated when they advance to feed the tape, combined with the actuating-rod r' and links p', carrying the pin z', said links connecting the said rod and slide n' and operating the pincher-levers, as set forth.

9. The combination, with the pusher a' and the tilting folding-finger k^2, for doubling one end of the paper tape upon the package, of the mechanism for folding the other end upon the package, consisting of the pivotally-hung vertically-reciprocating folding-finger p^2 and its actuating-spring, substantially as described.

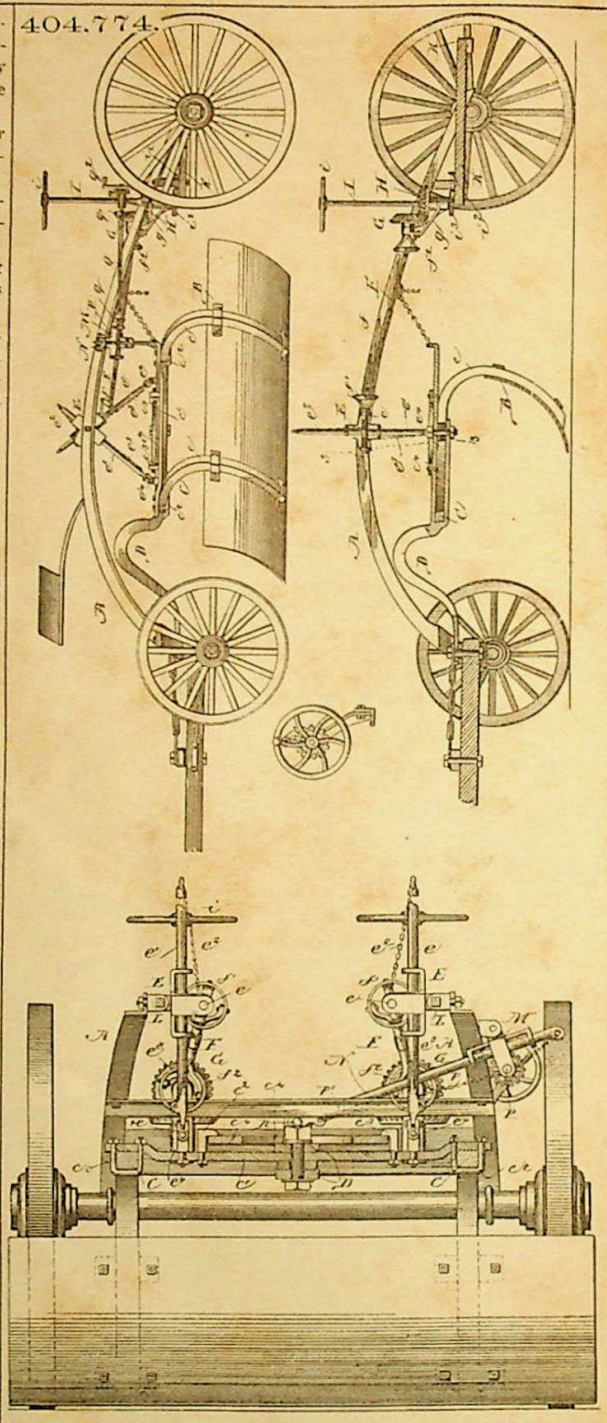
10. In a machine of the class described, the combination of the pockets d, pocket-clearing devices, substantially as set forth, and the lateral feeding device composed of pivoted arms n, having the leftward, upward, rightward, and downward motions, substantially as described, and for the purpose set forth.

11. In a machine of the class described, the combination of the pockets d, pocket-clearing devices, substantially as described, the lateral feeding device composed of pivoted arms n, having the four motions set forth, and the independent pusher a', actuated by lever d' and stop b, as explained.

12. In a machine of the class described, the combination, with banding mechanism, substantially as herein described, in which the banding-tape is fed across the path of movement of the package of cards, of feeding mechanism, consisting of means, substantially as described, for imparting to a package of cards a main progressive movement, and a pusher a', for imparting a supplementary movement to the package to move it into the place where it is bound with the tape, substantially as set forth.

13. In a machine of the class described, the combination, with the folding-finger p^2, pivotally hung to a lever t^2, and a lever t^3, pivoted to said lever t^2 and to the machine, of cams r^2 and r^3, substantially as shown, to operate the said levers in the manner described, whereby after the folding-finger has been operated to fold the tape upon a package its base is first lifted from contact with it and the finger drawn slightly backward before its downward movement begins, for the purpose set forth.

404,774.



404,774. ROAD-SCRAPING MACHINE. MORTON G. BUNNELL, Chicago, Ill., assignor to Frederick C. Austin, same place. Filed Jan. 2, 1889. Serial No. 295,243. (No model.)

Claim.—1. The combination, substantially as hereinbefore set forth, of the scraper-blade and a pair of extensible swinging hangers therefor, each comprising a member hung by a universal joint upon a support on the body-frame of the machine and a member having a suitable connection with the scraper-blade and a sliding connection with the said member which is hung by a universal joint, for the purpose described.

2. The combination, substantially as hereinbefore set forth, of the scraper-blade and a pair of sliding rods having jointed connections with the scraper-blade, and brackets supported from the body-frame of the machine by universal joints and provided with bearings with which the slide-rods have sliding connections, for the purpose described.

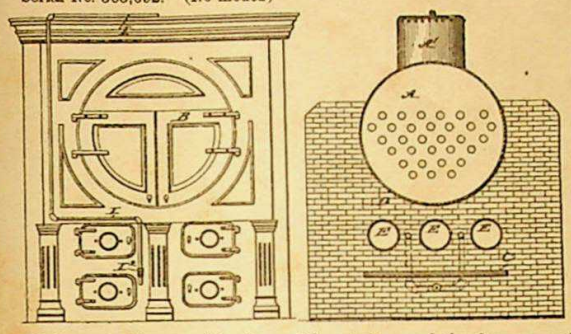
3. The combination, substantially as hereinbefore set forth, with the scraper-blade, of a swinging hanger therefor, comprising a slide-rod having a suitable connection with the scraper-blade, a swinging bearing with which the said rod has a sliding connection, and a winding-shaft supported with the swinging bearing and connected with the slide-rod by chains respectively for raising and lowering the same.

4. The combination, substantially as hereinbefore set forth, with the scraper-blade, of a swinging hanger therefor, comprising a slide-rod, a swinging bearing with which the said rod has a sliding connection, a winding-shaft connected with the slide-rod by chains, for the purpose specified, and a jointed rotary shaft connected with the rotary winding-shaft as a means for operating the same.

5. The combination of the scraper-blade and means for moving the scraper-blade toward either side of the machine, consisting of a slide-rod having a jointed connection with the scraper-blade and a sliding connection with a joint-supported bearing, and winding device, such as set forth, for operating the slide-rod.

6. The combination, substantially as hereinbefore set forth, of the scraper-blade, the segment C, consisting of a bar having its horizontal curved portion provided with notches and its bent ends secured to the scraper-blade, the draft-bar having a bearing for the horizontal portion of the segment, the locking-lever R, pivoted upon the draft-bar, a foot-lever r' below the driver's seat, and a rod r, connecting the foot-lever with the locking-lever, for the purpose described.

404,775. SMOKE-CONSUMER. JAMES C. BUTLER, Quincy, Ill., assignor of one-half to Ezra Best, same place. Filed Mar. 18, 1889. Serial No. 303,692. (No model.)



Claim.—1. The combination, with a boiler and the furnace and bridge-wall of the same, of flues leading through the bridge-wall, a main pipe passing through the bridge-wall below the furnace-grate, branch pipes leading from the main pipe up and forward through the bridge-wall above the furnace-grate, and a steam-pipe leading from the boiler-dome to the main pipe.

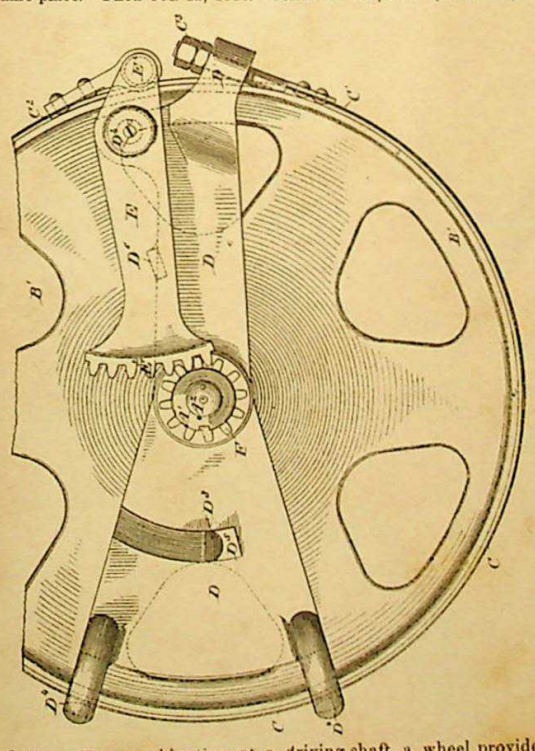
2. The combination, with a boiler and the furnace and bridge-wall of the same, of flues leading through the bridge-wall, the main pipe and the branch pipes, the apertured end cap, and the steam-pipe, substantially as set forth.

3. The combination, with a boiler and the furnace and bridge-wall of the same, of flues leading through the bridge-wall, the main pipe and the branch pipes, the apertured end cap, and the steam-pipe having the tapering lower end, substantially as set forth.

4. The combination, with a boiler and the furnace and bridge-wall of the same, of the tapering flues, the main pipe having the apertured end cap, the branch pipes, and the steam-pipe having the tapering lower end, substantially as set forth.

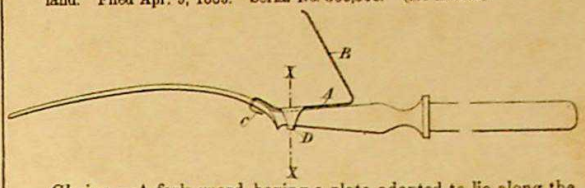
5. The combination, with a boiler and the furnace and bridge-wall of the same, of the tapering flues, the inclined floor, the main pipe having the apertured end cap, the branch pipes, and the steam-pipe, substantially as set forth.

404,776. FRICTION CLUTCH AND BRAKE. THOMAS W. CAPEN, Stamford, Conn., assignor to The Yale & Towne Manufacturing Company, same place. Filed Oct. 12, 1888. Serial No. 287,889. (No model.)



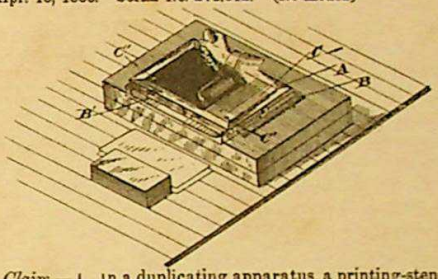
Claim.—The combination of a driving-shaft, a wheel provided with a friction-rim turning loosely on the shaft, a casting D, secured to the driving-shaft, a brake-lever pivoted to the casting, a strap secured at one end to the casting and at the other to the brake-lever, a pinion engaging with said lever to operate it, a handle secured to said pinion, and a locking device consisting of the socket D^3 in the casting, the bolt G′, and the lever G^3, secured thereto in the handle, adapted to lock the handle in place, substantially as set forth.

404,777. FORK-GUARD. REGINALD B. B. CLAYTON, London, England. Filed Apr. 9, 1889. Serial No. 306,568. (No model.)



Claim.—A fork-guard having a plate adapted to lie along the top of the stem of the fork and whose end is bent downward and backward, passing between the prongs and holding beneath them, and which is provided with spring-jaws to clasp the stem of the fork, substantially as described.

404,778. DUPLICATING APPARATUS. GEORGE H. DAVIS, Washington, D. C., assignor to Augustus D. Klaber, New York, N. Y. Filed Apr. 18, 1888. Serial No. 271,012. (No model.)

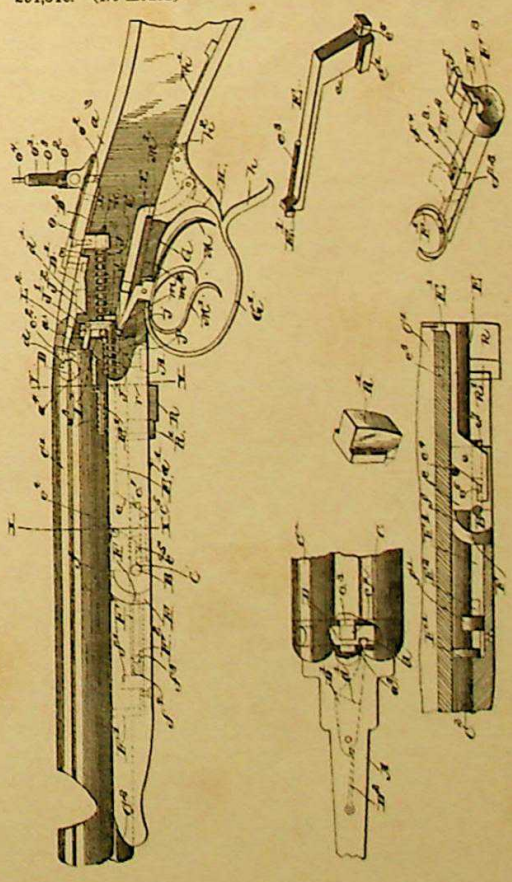


Claim.—1. In a duplicating apparatus, a printing-stencil with one or more air-holes made therein for releasing a sheet adhering to the said stencil, substantially as described.

2. In a duplicating apparatus, the combination, with a stencil-frame, of a printing-board constructed with an inclined surface at its hinged side and cut away between the hinges, so as to leave a longitudinal opening, substantially as and for the purposes described.

3. In a duplicating apparatus, the combination of a stencil-frame the inner side A′ of which is rounded off, and a printing-board constructed with an inclined surface at its hinged side and cut away between the hinges, so as to leave a longitudinal opening, substantially as and for the purposes described.

404,779. BREECH-LOADING FIRE-ARM. WILLIAM DICER and CASSIUS M. BARKER, Albion, Mich. Filed Nov. 21, 1888. Serial No. 291,510. (No model.)



Claim.—1. The combination, with the breech-frame having the barrels pivoted thereto, of the adjustable guard engaging the front end of the breech-frame at its rear end and provided at its front end with a spring-catch engaging the barrel, the stationary block on the barrel and adjustable block on the guard bearing against the stationary block, and the compensating screw mounted in the guard and bearing against the adjustable block, substantially as and for the purpose specified.

2. The combination, with the breech-frame having the barrels pivoted thereto, of the adjustable guard provided at its front end with a spring-catch F' to engage the barrel, the stationary block f' on the barrel, the slotted adjustable block F^2, mounted on a guiding-screw on the guard and adapted to bear against the rear side of the stationary block, and the compensating screw F^3, mounted in a threaded bore F^4 in the guard and bearing at its front end against the rear side of the adjustable block, substantially as specified.

3. The combination, with the breech-frame having a transverse hinge-pin in its front end, of the depending notched tongue on the barrel engaging the said hinge-pin, the depending lug R on the heel of the barrel, fitting in a slot in the breech-frame, and the compensating key R', located in front of the said lug and bearing against its front side, substantially as specified.

4. The combination, with the breech-frame having a transverse hinge-pin, of the depending notched tongue on the barrel engaging the said pin, the compensating plug arranged in a longitudinal bore in the tongue and bearing against the hinge-pin, and the screw-fitting in a threaded portion of the said bore and bearing against the said plug, substantially as and for the purpose specified.

5. The combination, with the breech-frame provided at its front end with a longitudinal slot, of the depending tongue on the barrel fitting in the said slot and pivoted to the breech-frame, the compensating plug fitting in a longitudinal bore in the tongue, and the adjustable guard attached to the front end of the breech-frame, all constructed and arranged substantially as specified.

6. The combination, with the breech-frame and the barrels pivoted thereto and having a depending tongue *c*, of the extractor mounted on the barrel and provided with a depending web *e*, having an inclined front side, the stationary pin e^4 in the breech-frame adjacent to the said web and adapted to bear on the inclined front side, and provided with ribs engaging grooves in the tongue *c* thereof, and the head on the extractor fitting in a notch at the breech of the barrels, substantially as and for the purpose specified.

7. The combination, with the breech-frame and the barrels pivoted thereto, of the extractors mounted on the barrels and provided with heads fitting in notches at the rear ends of the barrels, the forwardly-extending guiding-pins e^3 on the heads, the depending webs *e e*, provided with inclined front sides operating in contact with a stationary pin e^4, and the extensions or stops e^5 at the lower ends of the said webs on the front sides of the same, which are adapted to bear against the said stationary pin to limit the movement of the barrels, substantially as specified.

8. The combination of the breech-block having a transverse perforation a^4, the barrels provided with a lug c^2, having a flattened perforation c^3, adapted to register with the perforation a^4, the locking-bolt mounted in said perforations and having a flattened lower side and provided with a notch *d*, the operating-lever D', pivoted on the breech-block and having its front end engaging the notch *d*, and the spring D^2, secured to the breech-block and bearing on the heel of the lever, as set forth.

9. The combination, with the breech-frame having the block *a*, provided with a transverse perforation a^4, and the barrels pivoted to the said frame and adapted to bear at their rear ends against the said block, of the lug c^2 on the rear end of the barrels, fitting in a vertical slot a^5 in the block *a*, and provided with a transverse perforation c^3, which is flattened at its lower side and registers with the perforation a^4, and the locking-bolt D, mounted in the perforation a^4 and provided with a tapered and flattened inner end to fit the perforation in the lug c^2, and the spring-actuated lever connected to the said bolt, substantially as specified.

10. The combination, with the barrel having an open breech and the hammer aligned with the breech, of the cocking-lever arranged adjacent to the trigger-guard, and the draw-bar or link having its rear end pivoted to the cocking-lever and its front end engaging the hammer, substantially as specified.

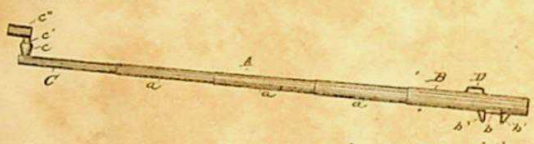
11. The combination, with the hammer arranged opposite the open breech of the barrel and provided with a shoulder, of the cocking-lever, the spring bearing at its free end on the said lever to hold it normally in the desired position, and the draw-bar or link pivoted at one end to the cocking-lever and provided at its front end with a transverse pin to engage the shoulder on the hammer, substantially as specified.

12. The combination, with the hammer provided with a shoulder, of the trigger-guard cut away at its rear end, the cocking-lever pivoted to the trigger-plate and fitting in the opening in the trigger-guard to complete the same when in its normal position, and the draw-bar or link connected to the cocking-lever and provided with a transverse pin engaging the shoulder on the hammer, substantially as specified.

13. The combination, with the breech-frame, the barrels pivoted thereto and provided with a rearwardly-extending perforated lug c^2, fitting in an opening in the breech-frame, and the locking-bolt mounted in the breech-frame and engaging the perforated lug, of the spring-actuated operating-lever connected at its front end to the locking-bolt and provided with an inclined shoulder d', the hammer mounted in the breech-frame and provided with a shoulder, the cocking-lever provided with an operating-spring, and the draw-bar or link pivoted at its rear end to the cocking-lever and provided at its front end with a transverse pin engaging the shoulder on the hammer, and a beveled projection which bears against the inclined shoulder d' when the draw-bar or link is drawn rearwardly, substantially as and for the purpose specified.

14. The combination, with the barrels C C' C^2, of the hammers J J, provided with the shanks *j j*, having rear notches J^3 and shoulders J^2, and the firing-pins J', connected to the shanks, the hammer K, provided with a firing-pin and having a shoulder K^2 and sear-notches K^3, the springs coiled on the said hammers, the triggers M M, provided at their front ends with sears *m m* to engage the rear notches in the hammers J J, the trigger M', provided with the sear m' to engage the sear-notches in the hammer K, the sear-springs bearing on the heels of the said triggers, the cocking-lever, and the draw-bar or link connected to the said lever and provided with a transverse pin engaging the shoulders J^2 J^2 and K^2 on the hammers, substantially as specified.

404,780. WATER-CONVEYER. FRANK D. DOWD, Cortland, N. Y. Filed Sept. 29, 1888. Serial No. 286,812. (No model.)

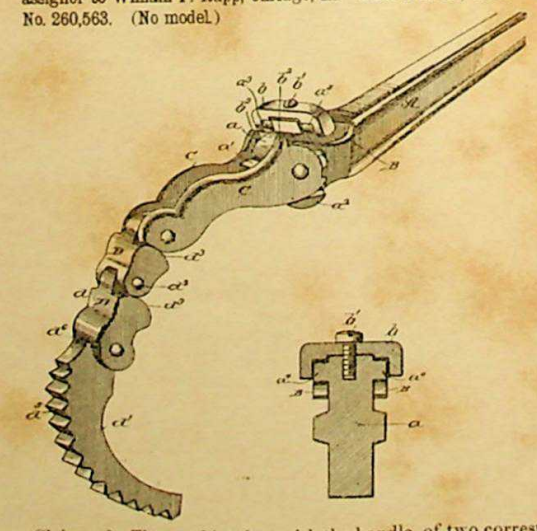


Claim.—1. An apparatus for conveying water, consisting of a series of telescopic tubes, each tube made tapering, whereby, when extended, the larger end of one tube will fit tightly within the smaller end of the adjacent tube, and a head-section provided with a mouth-piece carrying a swiveled head adapted to receive the spout or mouth-piece of a hydrant or supply-pipe, substantially as specified.

2. An apparatus for conveying water, consisting of a series of telescopic tubes, each tube made tapering, so that when extended for use the larger end of each tube will fit tightly within the smaller end of each adjacent tube, a head-section provided with a mouth-piece carrying a swiveled head, and a foot-piece provided with a rest or holder for retaining said foot-piece in proper position, substantially as specified.

3. A water-conveyer consisting of a series of intermediate telescopic tubes *a*, the end sections B and C, the former provided with a plate *b* and standards *b'*, and the latter with an elbow *c* and swiveled head c' c^2, substantially as specified.

404,781. PIPE-WRENCH. CHARLES L. DUNHAM, Union City, Pa., assignor to William F. Rupp, Chicago, Ill. Filed Jan. 12, 1888. Serial No. 260,563. (No model.)

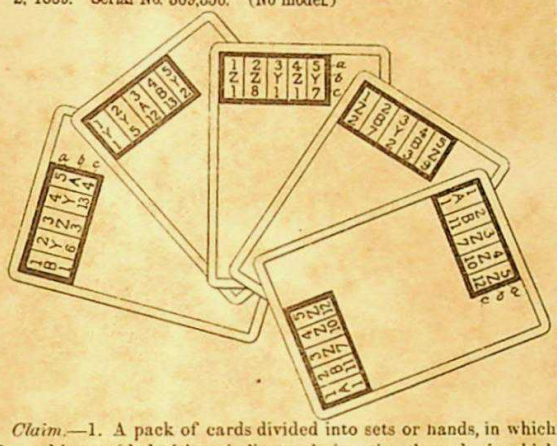


Claim.—1. The combination, with the handle, of two corresponding arms pivoted one at each side thereof and provided with lugs and

curved springs having their free ends engaging said lugs, substantially as set forth.

2. The combination, with the handle, of two corresponding arms pivoted one at each side thereof and provided with lugs, lugs upon said handle, curved springs disposed one at each side the handle and engaging the lugs on the arms, said springs being secured between the lugs on the handle, a plate secured to the latter, an arm provided with teeth, and links connecting the same with the spring-actuated arms, substantially as set forth.

404,782. PLAYING-CARDS. ROBERT F. FOSTER, Baltimore, Md., assignor of one-half to Alexander J. Leith, New York, N. Y. Filed May 2, 1889. Serial No. 309,356. (No model.)



Claim.—1. A pack of cards divided into sets or hands, in which each card is provided with an indicator designating the order in which that card should be arranged in its hand, substantially as described.

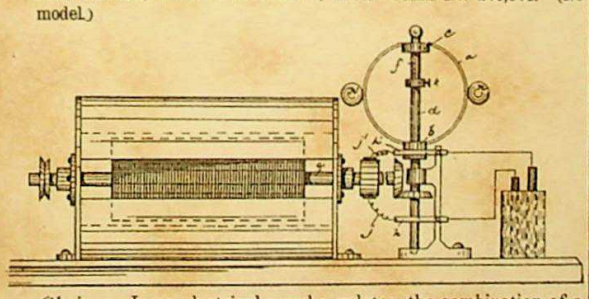
2. A pack of cards divided into hands, in which each card is provided with an indicator designating the order of playing in a prearranged game, substantially as described.

3. A pack of cards divided into hands, in which each card in each hand is provided with two indicators, one distinguishing the card from those of other players and the other designating the order in which the card should be played in a prearranged game, substantially as set forth.

4. A pack of cards divided into hands, and in which the cards are provided with two series of indicators, one series designating the cards of different players and the other the order of playing the cards in a series of prearranged games, substantially as set forth.

5. A pack of cards divided into hands, and in which each card is provided with indicators designating the hand to which it belongs and the order of its playing in prearranged games, and with a third series of indicators designating the order of the games, substantially as set forth.

404,783. REGULATOR FOR ELECTRIC MOTORS. ALFRED GARTNER, Newark, N. J. Filed June 7, 1888. Serial No. 276,371. (No model.)

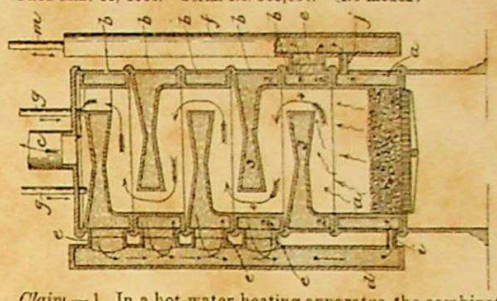


Claim.—In an electrical speed-regulator, the combination of a rotary shaft, an insulated collar, conductors *j j'*, a hoop fixed to said insulated collar and moving longitudinally on said shaft under the influence of centrifugal force, and a contact-bearing adapted to engage the hoop and complete an electrical circuit, substantially as and for the purposes set forth.

2. In an electrical speed-regulator, the combination of a shaft *d*, an insulated hoop *a*, and a collar *k*, arranged on said shaft and adapted to transmit the current from the said hoop to the shaft, substantially as and for the purposes set forth.

3. In an electrical speed-regulator, the combination of an insulating-sleeve *b'*, arranged on a rotary shaft *d*, a collar *b*, arranged on said sleeve, a hoop fixed to said collar and to a sliding collar insulated, as at *c'*, from said shaft, and a collar *k*, adapted to make a contact with said sliding collar, and conductors *j j'*, connected with the shaft and collar *b*, respectively, said parts being arranged and combined substantially as and for the purposes set forth.

404,784. WATER-HEATER. EUGENE N. GATES, Fitchburg, Mass. Filed Mar. 18, 1889. Serial No. 303,637. (No model.)



Claim.—1. In a hot-water heating apparatus, the combination of a fire-pot section having an outlet for hot water at its upper portion, a series of superposed sections arranged to be heated by the fire within the fire-pot section, and a return or inflow stand-pipe connected, as described, with the upper and lower portions of said superposed sections and with the lower portion of the fire-pot section, as set forth.

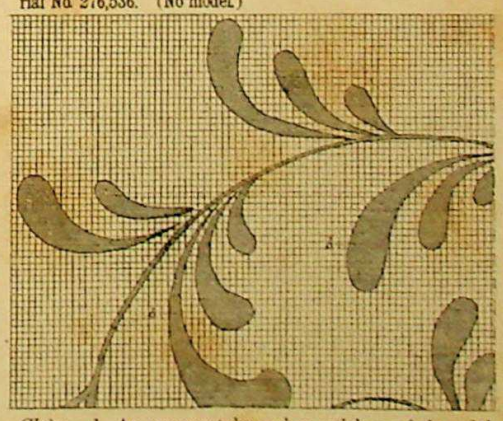
2. In a hot-water heating apparatus, the combination of a fire-pot section, a series of superposed sections arranged to be heated by the fire within the fire-pot section, a return or inflow stand-pipe connected, as described, with the upper and lower portions of said superposed sections and with the lower portion of the fire-pot section, and an outflow pipe or pipes connected with the upper portion of the fire-pot section, as set forth.

3. In a hot-water heating apparatus, the combination of a fire-pot section, a series of superposed sections arranged to be heated by the fire within the fire-pot section, an outflow-pipe connected with the upper portion of the fire-pot section and with the upper and lower portions of one or more of said superposed sections, and a return or inflow pipe connected with the upper and lower portions of the other superposed sections and with the lower portion of the fire-pot section, as set forth.

4. In a hot-water heating system, the combination of a fire-pot section and a series of superposed sections above the same, outflow-pipes communicating with the upper portion of the fire-pot section and conducting heated water therefrom, return-pipes conducting the return water to the highest of the superposed sections, and connections between said superposed sections and the fire-pot section, whereby the return water, the outflow of which is induced by the upward flow of heated water from the fire-pot section, is conducted from the upper superposed section successively through the other sections of said series and into the lower portion of the fire-pot section, as set forth.

5. In a hot-water heating apparatus, the combination of the fire-pot section *a*, the superposed sections *b*, relatively arranged, as described, and each composed of a hollow wall or water-leg, and a horizontal chamber located within the water-leg and above its lower portion, said chamber being separated from the water-leg at one side by an opening 4, the stand-pipe *d*, connected, as described, with the upper and lower portions of the sections *b* and with the lower portion of the fire-pot section, and an outflow pipe or pipes communicating with the upper portion of the fire-pot section, as set forth.

404,785. ORNAMENTAL VESSEL OR ARTICLE. THOMAS B. GIBSON, Glasgow, County of Lanark, Scotland. Filed June 8, 1888. Serial No. 276,536. (No model.)

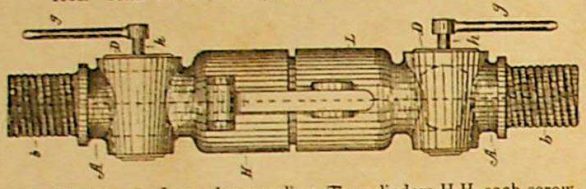


Claim.—1. An ornamental vessel or article consisting of the combination of a foundation or body substance with a woven-fabric covering of open-work stretched over the foundation and showing the color or ornamentation of the latter, substantially as and for the purpose herein set forth.

2. An ornamental vessel or article consisting of the combination of a foundation or body substance with a woven-fabric covering of

open-work carrying a design or ornamentation and stretched over the foundation, but showing through it the color of the latter, substantially as and for the purpose herein set forth.

404,786. STEAM-PIPE COUPLING. FREEMAN HANSON, Hollis, assignor of one-half to Charles B. Harmon, Biddeford, Me. Filed Jan. 7, 1888. Serial No. 260,253. (No model.)



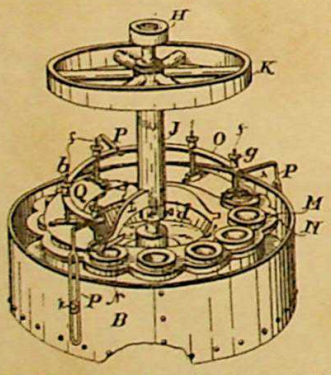
Claim.—1. In a pipe-coupling, the cylinders H H, each screw-threaded at its outer end and connected thereby with the part A, and each having on opposite sides projecting lug W and latching-rod Y, hinged thereto, and an inclined plane V, and lugs *b'* and cam-lever L, pivoted thereto, substantially as described.

2. In a pipe-coupling, the two cylinders H H, each screw-threaded at the end and provided with locking-latches and levers, as described, for securing them together and internally with stop *s* and rim *p*, and movably within it a spring-actuated central valve-stem *j*, centrally surrounded by the beveled collar *k*, having radial arms *m* and the rim *q*, and centered in cross-piece *t*, substantially as described.

3. In a pipe-coupling, the combination of the part A, screw-threaded, as described, at each end, and having the cock or valve D, with the cylinder H, screw-threaded at one end to engage with the part A, and having within it a spring-actuated valve and externally on one side an incline and a cam-lever and on the other side a latching-rod, substantially as described.

4. A pipe-coupling each part of which is composed of the following elements, viz: a screw-threaded end for attachment to the pipe, a drip-valve in said end, a cylinder connected with said end by screw-threads and having externally means for locking it to the opposite part, said means consisting of an incline and cam-lever on one side and on the opposite side a latching-rod and internally a central spring-actuated stop-valve adapted to be opened when the two parts of the coupling are united, substantially as described.

404,787. GRINDING-MACHINE. CHARLES H. HENDERSON, Canton, Ohio, assignor to the Canton Glass Company, same place. Filed June 8, 1888. Serial No. 276,448. (No model.)



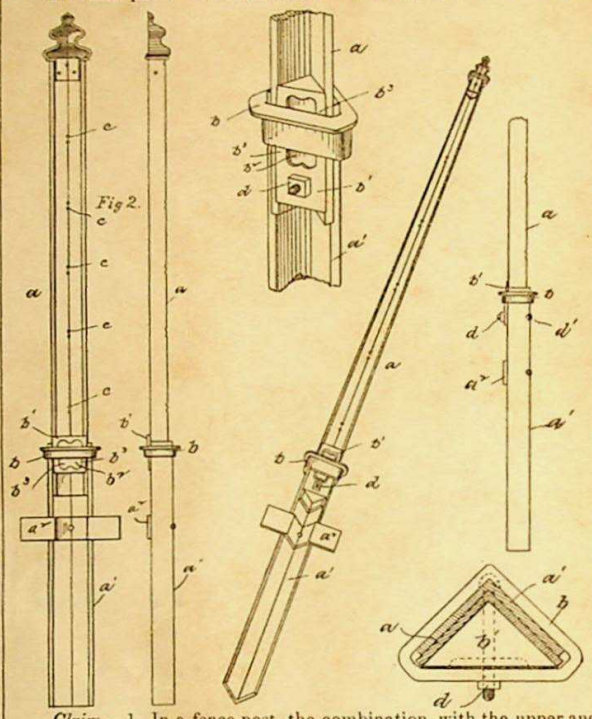
Claim.—1. In a grinding-machine for glass and other wares, the combination, with the shaft D and the grindstone secured thereto, of a hollow shaft J, sleeved upon shaft D, a frame O, a plate Q, having a yielding connection with the said frame, means for adjusting said plate and frame in unison, and a disk for holding the ware to be ground, said disk secured to the shaft J, substantially as set forth.

2. In a grinding-machine for glass and other wares, the combination, with the shaft D and a grindstone secured thereto, of a hollow shaft J, sleeved upon said shaft D, a disk for holding the ware to be ground, an adjustable frame O, a plate Q, having a yielding engagement with said frame, means for adjusting said plate and frame in unison, and means for adjusting said disk independently of said frame and plate, substantially as set forth.

3. In a grinding-machine for glass and other wares, the combination, with a vertical shaft D and a horizontal grinding-stone adjustably secured thereto, of a hollow shaft J, embracing and rotating about said shaft D, disk M, secured to the shaft J, and pulleys H and *k*, by which the stone G and disk M may be rotated at different speeds, substantially as set forth.

4. In a grinding-machine for glass and other wares, the combination of the supporting-frame A, inclosing-case B, vertical shaft D, a plate F, adjustably secured to said shaft, a grinding-stone G, secured to said plate, a collar *c*, adjustably secured to shaft D, a hollow shaft J, embracing shaft D, a disk M, secured to said hollow shaft, holders N, secured to said disk, frame O, adjustably secured to the case B, pressure-plate Q, and pulleys H and *k*, by which the grinding-stone and the plate F may be rotated at different rates of speed, substantially as set forth.

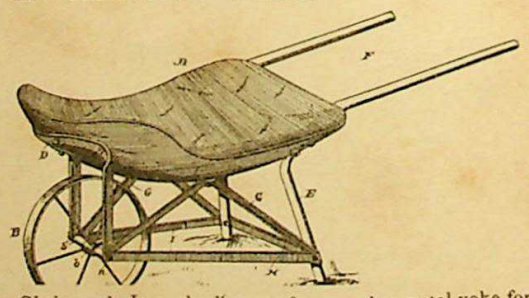
404,788. FENCE-POST. JOHN KELLY, Troy, Ohio, assignor to himself, George C. Kelly, Orrin Kelly, George S. Helman, and W. A. Evans, all of same place. Filed Mar. 6, 1889. Serial No. 302,360. (No model.)



Claim.—1. In a fence-post, the combination, with the upper and lower parts formed of angle-iron, as described, one of the parts being adapted to lap the other, with the wings of the angle-iron parallel, of a triangular wedge-shaped key adapted to fit in the angle of said iron, and a clamping-ring extending around said angle iron and key and adapted to be driven on said wedge to draw the parts together, substantially as specified.

2. The combination, with the upper and lower angle-iron pieces adapted to lap each other, as described, of a triangular clamping-ring extending around said pieces, a triangular wedge-shaped key having a depression and side ways thereon adapted to be inserted in the angle of the parts under said ring, and a fastening-bolt for securing said parts and key in position, substantially as specified.

404,789. WHEELBARROW. WILBER E. KILBORN, Sidney, Ohio, assignor of one-half to William H. C. Goode, same place. Filed Feb. 27, 1889. Serial No. 301,357. (No model.)

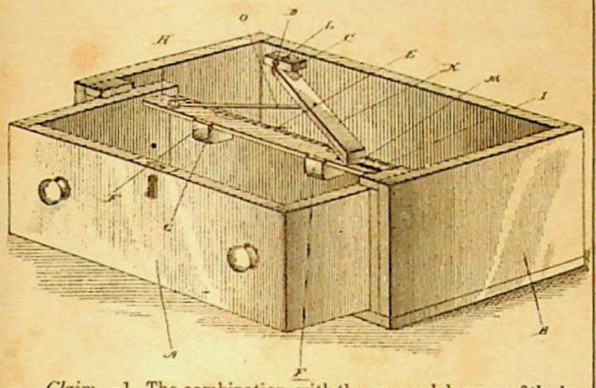


Claim.—1. In a wheelbarrow-frame, a bar-metal yoke for the support of the front end of the tray, said yoke being so shaped that its middle portion will conform to the outline of the tray transversely and so that its end portions will extend down to the ends of the wheel-axle to form bearings for the same, substantially as described.

2. In a wheelbarrow-frame, metal trusses for supporting the middle portion of the tray, each of which is so constructed as to spring from the end of the wheel-axle, over which it is passed, to the bottom of the tray and thence to the leg near its bottom, it being bolted to each of said parts, substantially as set forth.

3. A wheelbarrow-frame comprising the trusses, the yoke, the legs, and the handles, each leg being formed integral with one of the handles, and the longitudinal and transverse braces, all constructed and combined substantially as described, and for the purposes stated.

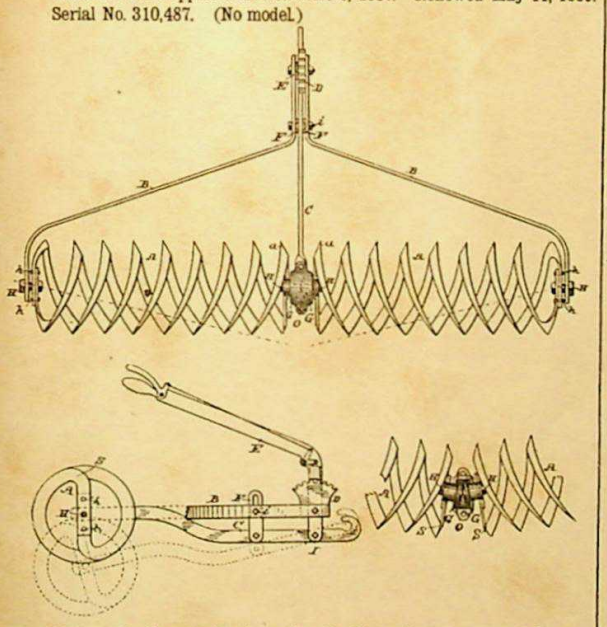
404,790. FURNITURE-DRAWER. JOSEPH H. KNAUS, Fayette, Mo. Filed Jan. 17, 1889. Serial No. 296,582. (No model.)



Claim.—1. The combination, with the case and drawer, of the bar K, pivotally connected at one end to a fixed point in the case and having the pin or screw at its free end, the bar H, secured to the drawer and having the slot I at one end engaged by the pin or screw, and the link-rod connecting the opposite end of the bar H with the center of the bar K, substantially as described.

2. The combination, with the case and the drawer, of the cleats F, secured to the latter, the bar H, rabbeted in recesses in the upper edges of said cleats and having the slot I at one end, the bar K, pivotally connected at one end to a fixed point in the case and having the pin or screw at its outer end working in the slot I, and the link-rod connected to the end of bar H opposite said slot, and also connected to the center of bar K, substantially as described.

404,791. PULVERIZING-HARROW. CHARLES LA DOW, Albany, N. Y. Original application filed Oct. 25, 1886, Serial No. 217,133. Divided and this application filed June 8, 1887. Renewed May 11, 1889. Serial No. 310,487. (No model.)



Claim.—1. In a pulverizer, the double spirals A, mounted upon each other, in combination with a draft-frame.

2. In a pulverizer, a draft-frame, in combination with a gang of spiral cutters mounted upon each other so as to have spring motion or resilience.

3. In a pulverizer, two gangs of opposing cutters, buffers having flattened abutting surfaces between the gangs, a box which loosely envelops the buffers, so they can roll upon each other, and a draw-bar for the box, in combination with a draft-frame.

4. In a pulverizer, two gangs of opposing cutters, buffers having flattened convex abutting surfaces working against each other between the gangs, and a box which loosely envelops the buffers, so they can roll upon each other, for maintaining both buffers in a uniform horizontal and vertical plane with each other, in combination with a draft-frame.

5. In a screw-pulverizer, the combination of the double spiral cutters having the end pieces or bars S, for attaching the spirals to each other.

6. In a pulverizer, two gangs of horizontally-adjustable cutters and a draft-frame, in combination with a lever for operating the bar C, said lever being bent rearward, so as to be reached from the rear of the gangs.

7. In a pulverizer, a draft-frame, two gangs of cutters, and two opposing buffers having flattened abutting heads, each head being mounted on a stem smaller than the head, in combination with a coupling-box loosely enveloping the buffers, so they can roll upon each other, and having flanges which coact with the buffer-heads to prevent the gangs from spreading apart.

8. In a pulverizer, a cylindrical gang of spiral cutters composed of two or more strips of metal mounted upon each other by means of intermediate fastenings, which are attached to the strips at two points only at or near the ends of the gang.

9. In a pulverizer, a cylindrical gang of spiral cutters adapted to revolve upon hubs or pins attached to the ends of the spirals only, in combination with a draft-frame connected with said hubs or pins.

10. In a pulverizer, a draft-frame, in combination with a cylindrical gang of spiral cutters adapted to thrust part of the soil laterally and to permit part thereof to pass through the gang without encountering other obstruction than presented by the spirals.

11. In a harrow or pulverizer, the combination, substantially as set forth, of two gangs of cutters set at right angles to the line of draft and adapted to create end-thrust by contact with the soil, a draft-frame, connections between the extreme outer ends of the gangs, and said frame located in the axial line of the gangs, and a hinge-connection between the extreme inner ends of the gangs and frame on which each gang independently vibrates, also located in the axial line of the gangs, whereby the end-thrust of the gangs is counteracted from a point directly in line with the center of revolution of the gangs.

12. In a pulverizer, a cylindrical spiral cutter without an interior frame or axle, adapted to revolve in bearings at its ends, in combination with a draft-frame in which it is mounted.

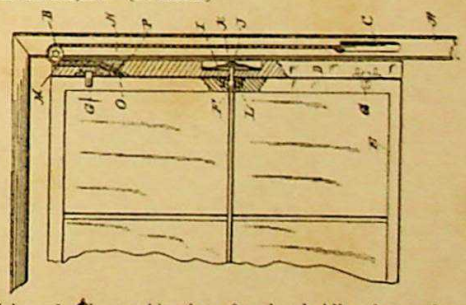
13. In a pulverizer, two opposing gangs of right and left spiral cutters adapted to counteract the inward side-thrust of each other by contact between their inner ends, in combination with a draft-frame in which the gangs are mounted.

14. A spiral cutter formed of a continuous strip of metal coiled into a cylindrical spiral without an interior frame or axle shape, and supported at its ends only.

15. A cutter formed of a continuous strip of spring metal coiled into a cylindrical spiral the convolutions of which are capable of springing or vibrating, for the purpose described, in combination with a frame in which it is mounted.

16. The combination of the frame and draft devices and spiral cutters which throw the earth from each other and are so constructed as to permit part of the earth cut up to pass inwardly endwise through the cutters to fill the furrow formed at their inner ends.

404,792. WINDOW. HENRY MAEURER, Brooklyn, N. Y., assignor of one-half to William Heinzmann, same place. Filed Oct. 16, 1888. Serial No. 288,237. (No model.)



Claim.—1. The combination of a glass-holding frame pivoted at opposite sides to sliding sash-rabbet strips, said strips being provided with cord-receiving recesses extending from the upper rear edge thereof through to the front edge thereof, substantially as set forth.

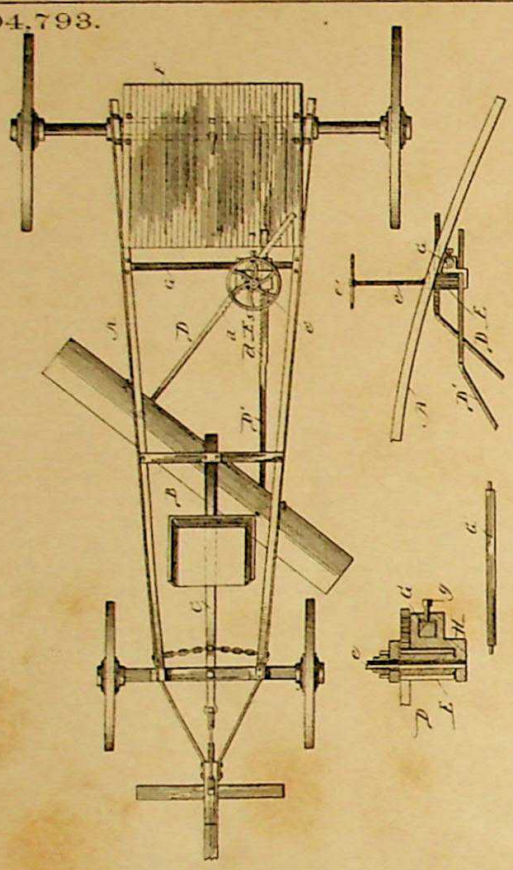
2. The combination of a glass-holding frame pivoted at opposite sides to sliding sash-rabbet strips, said strips being provided with cord-receiving recesses extending from the upper rear edge thereof through to the front edge thereof, and a cord-fastening pin, substantially as set forth.

3. The combination of a glass-holding frame pivoted at opposite sides to sliding sash-rabbet strips, said strips being provided with cord-receiving recesses extending from the upper rear edge thereof through to the front edge thereof, and a spring which presses the sliding strip to the glass-frame, substantially as set forth.

404,793. ROAD-SCRAPER. GEORGE N. MILLER, Ashton, assignor to Frederick C. Austin, Chicago, Ill. Filed Jan. 28, 1889. Serial No. 297,887. (No model.)

Claim.—1. The combination, substantially as hereinbefore set forth, of the scraper-blade and a reversing device consisting of a couple of longitudinally-movable reversing-rods, and a reversing device com-

404,793.



mon to both rods and adapted for shifting the rods longitudinally in opposite directions.

2. The combination, substantially as hereinbefore set forth, with the scraper-blade, of the two reversing-rods and the reversing-gear common to both rods, for the purpose described.

3. The combination, substantially as hereinbefore described, with the scraper-blade, of the reversing-rods and a gear common to both rods and supported upon a rocking bearing.

4. The combination, substantially as hereinbefore set forth, with the scraper-blade, of the reversing-rods and the reversing-gear common to both rods and adjustable transversely to the line of progression.

5. The combination, substantially as hereinbefore set forth, with the scraper-blade, of the reversing-rods connected therewith, and the reversing-gear common to both rods and mounted upon a rocking bearing which is adjustable transversely to the line of progression.

6. The combination, substantially as hereinbefore set forth, with the scraper-blade, of the reversing-rods D and D′, the reversing-gear common to both rods, the bearing H, carrying the reversing-gear, and the rocking shaft upon which said bearing is adjustably secured.

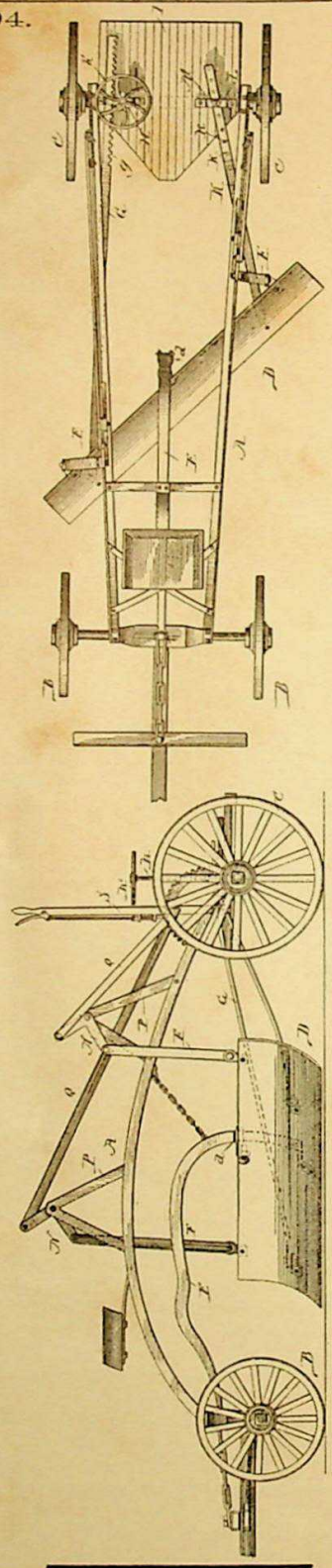
404,794. ROAD-SCRAPER. ORTUS E. MOATS, Chicago, Ill., assignor to Frederick C. Austin, same place. Filed Jan. 18, 1889. Serial No. 296,760. (No model.)

Claim.—1. The combination, substantially as hereinbefore set forth, in a wheeled road-scraper, of the scraper-blade pivotally connected midway of its ends with a draft-bar, and a pair of adjusting-bars extending rearwardly from the scraper-blade and pivotally connected therewith at opposite sides of the pivotal connection between the scraper-blade and the draft-bar, said adjusting-bars being both adjustably held at the rear of the machine, for the purpose set forth.

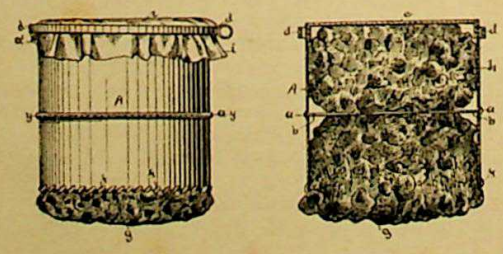
2. The combination, substantially as hereinbefore set forth, with the scraper-blade arranged to swing or vibrate horizontally about a vertical line midway of its ends, of a pair of adjusting-bars extending rearwardly from the scraper-blade and connected therewith respectively at opposite sides of its longitudinal middle, one of said adjusting-bars being provided with a line of teeth, and a gear for operating said adjusting-bar, for the purpose described.

3. The combination of a draft-bar E, the scraper-blade D, pivotally connected with the draft-bar the, adjusting-bars G and K, the gear for adjusting one of said bars, and the device—such as set forth—for locking the other one of said bars, for the purpose described.

404,794.



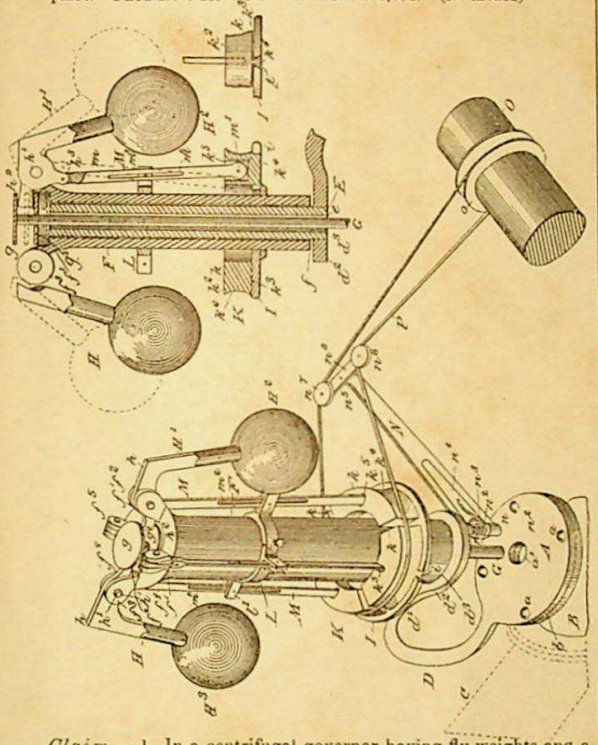
404,795. SLATE-CLEANER. JAMES M. MCFARLAND, Columbus, Ohio. Filed Aug. 30, 1888. Serial No. 284,155. (No model.)



Claim.—1. The combination, with the case A, having perforated partition *b*, of the supply and erasing sponges *h* and *g*, located, as described, within said case, and follower *c*, substantially as and for the purpose specified.

2. The combination, with the case A, having perforated partition *b* and hinged bail *d*, of the supply and erasing sponges *h* and *g*, located within the case, as described, follower *c*, and drying-cloth *i*, the latter held by bail *d*, described, substantially as and for the purpose specified.

404,796. STEAM-VALVE GOVERNOR. FREDERICK B. PETTENGILL, Rosedale, Kans., assignor of one-half to Edward Nicholson, same place. Filed Nov. 13, 1888. Serial No. 290,758. (No model.)



Claim.—1. In a centrifugal governor having fly-weights and a rotating sleeve, the combination, with said sleeve and weights, of a fixed plate, and an alternately expanding and contracting pulley having its sections movably keyed on said plate, and levers connected with said fly-weights and the sections of said pulley, substantially as described.

2. In a centrifugal governor having fly-weights and alternately expanding and contracting pulley, and oscillating bars connected with said pulley and said weights, for the purpose described.

3. In a centrifugal governor having fly weights and arms, the combination, with said arms, of a pulley consisting of movable sections, and oscillating bars connected with said arms and said sections and radially adjustable, as and for the purpose described.

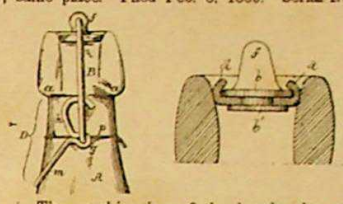
4. In a centrifugal governor having a rotary sleeve and fly-arms on said sleeve adapted to support the fly-weights, the combination, with said arms and sleeve, of a pulley consisting of movable sections, oscillating bars connected with said arms and said sections, and an adjustable collar upon said sleeve having lugs pivotally connected with said bars, for the purpose described.

5. In a centrifugal governor, the combination, with the rotating sleeve, of fly-weights, a radial supporting-plate, and a pulley having alternately expanding and contracting sections, and a recess in each section, radial lugs on said sleeve, and oscillating bars connected with said fly-weights and pivotally connected with said lugs, having an anti-friction end portion adapted to enter said recess in said section, for the purpose described.

6. In speed-regulating mechanism for engines, a governor having fly-weights, an alternately expanding and contracting pulley on said governor having movable sections, a driven shaft, a power-conveying belt connected with the sections of said pulley and said shaft, and levers connected with the sections of said pulley and said fly-weights, for the purpose described.

7. In speed-regulating mechanism for engines, the combination of a governor having fly-weights, and an alternately expanding and contracting pulley having movable sections, levers connected with said sections and said fly-weights, a driven shaft, a power-conveying belt connected with the sections of said pulley and said shaft, and a self-acting belt-adjusting arm adapted to adjust the alignment of and tension of said belt, as described.

404,797. BOTTLE-STOPPER. GEORGE REHFUSS, JOHN G. REHFUSS, and MARTIN O. REHFUSS, Philadelphia, Pa., assignors to the Joly Stopper Company, same place. Filed Feb. 8, 1889. Serial No. 299,133. (No model.)

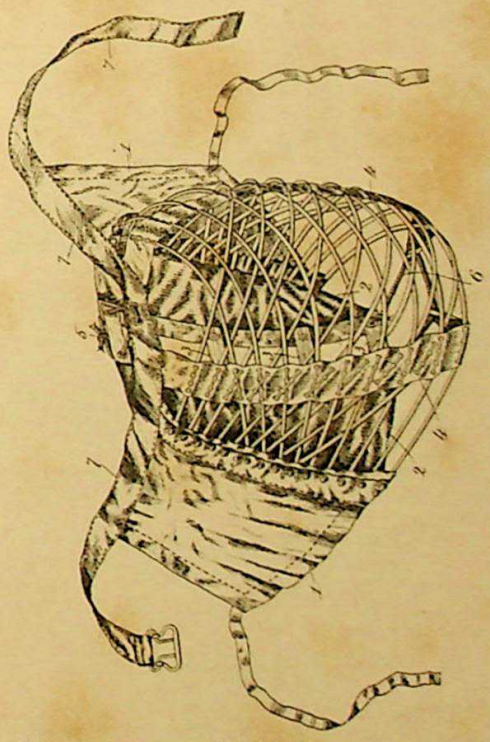


Claim.—1. The combination of the bottle, the stopper-carrying bail, and external tightening devices for the latter, with a stopper having a sealing-washer and a depression-stud connected to the bail and having a thin disk located above the washer and of such diameter that it can be drawn down through the mouth of the bottle, the disk on depression indenting the washer and causing the same to bind over its upper edge, substantially as specified.

2. The combination of the shouldered bottle, the stopper, and its bail, with the operating-lever hung to the bail and having arms engaging with the shoulder of the bottle, and a neck-wire free to move vertically on the bottle-neck and preventing lateral displacement of the lever thereon, substantially as specified.

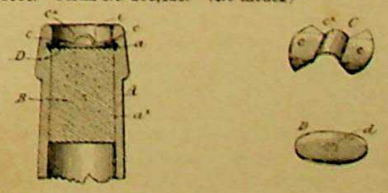
3. The combination of the shouldered bottle, the stopper, and its bail, the vertically-sliding neck-wire, and the operating-lever hung to the bail and having arms with rounded ends which engage with the shoulder of the bottle, as set forth.

404,798. BUSTLE. HOMER E. RHEUBOTTOM, Weedsport, N. Y., assignor to the Rheubottom & Teall Manufacturing Company, same place. Filed Feb. 25, 1889. Serial No. 301,016. (Model.)



Claim.—A bustle comprising side supports, arched wires springing therefrom, a waistband, tapes secured to and extending vertically across the sides of the arched wires, and flies extending inwardly from the side supports, the inner side edges of the flies being connected by elastic tapes, in combination with the elastic tapes connecting the upper ends of the flies and the waistband and the elastic tapes connecting the lower end of said flies and the lower ends of the vertical tapes, as set forth.

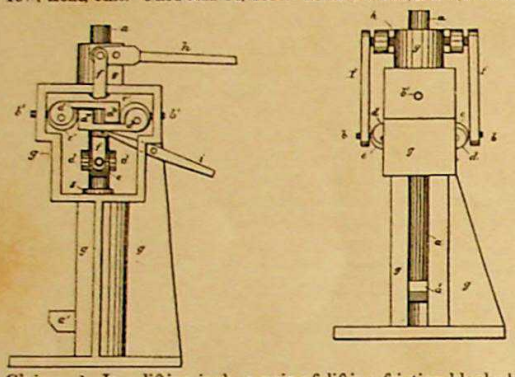
404,799. BOTTLE-STOPPER. JOSIAS J. SANDS, Merton, Wis. Filed Dec. 10, 1888. Serial No. 293,125. (No model.)



Claim.—1. The combination, with the walls of a vessel-orifice having internal shoulders and with a stopper in the orifice, of a flexible metal holding-bar inserted over the stopper and engaged at its ends with the said shoulders, the said metal bar being adapted to be withdrawn by outward flexure thereof between its ends and provided with a central prominence by which it may be engaged by a suitable instrument for its extraction.

2. The combination, with the walls of a vessel-orifice having internal shoulders and with a stopper therein, of a flexible metal holding-bar having a central arch or U-shaped bend, substantially as described.

404,800. LIFTING-JACK. GEORGE H. SHAFFER and JOHN BAIRSTOW, Kent, Ohio. Filed Jan. 14, 1889. Serial No. 296,454. (No model.)



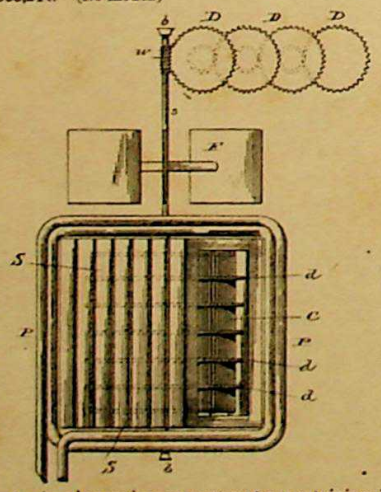
Claim.—1. In a lifting-jack, a pair of lifting friction-blocks having bearings opposite each other and on opposite sides of the lifting-bar, in combination with said bar, a cam pivoted to each of said blocks and having a bearing against the other and having a trunnion or suppert connected with the casing of the lifting-jack, and retaining friction-blocks, substantially as described.

2. In a lifting-jack, a pair of lifting friction blocks and cams, the blocks having bearings on the lifting-bar opposite each other and the cams being pivoted to the blocks and each having a bearing against the end of the block of the other cam, substantially as described.

3. In a lifting-jack, the combination of a pair of lifting-cams and friction-blocks, connected by links, retaining-blocks, a lever to operate the retaining-blocks, and a lever and link to operate the friction-blocks, substantially as described.

4. In a lifting-jack, the combination of a pair of lifting friction-blocks having bearings on opposite sides of the lifting-bar, each of said blocks being provided with a cam supported in the frame of the lifting-jack and having bearing against the other block, retaining friction-blocks, a lever to operate the same, and a lever and links to operate the lifting friction-block, substantially as described.

404,801. ELECTRIC METER FOR ALTERNATE CURRENTS. MARMADUKE M. M. SLATTERY, Fort Wayne, Ind., assignor to the Fort Wayne Electric Light Company, same place. Filed Mar. 14, 1889. Serial No. 303,217. (No model.)



Claim.—1. An alternating-current meter containing, in combination, a fixed primary coil conveying the current to be measured, a secondary closed coil of low resistance fixed relatively to the primary coil, so that its central plane shall cut the central plane of the primary coil, a cylinder of electrical conducting material organized to revolve in inductive relation with said primary and secondary coils, and carrying-disks of magnetic material cutting the magnetic field of force of each of said coils, with a retarding device and devices for counting and indicating the revolutions of the cylinder.

2. In an alternating-current meter having a fixed primary coil conveying the current to be measured and a secondary closed coil in inductive relation therewith, a moving part consisting of a copper cylinder carrying soft-iron disks and revolving in inductive relation to both said coils.

3. The combination, for use in an alternating-current meter, of a copper cylinder and soft-iron disks placed normal to its axis rotating in the inductive field.

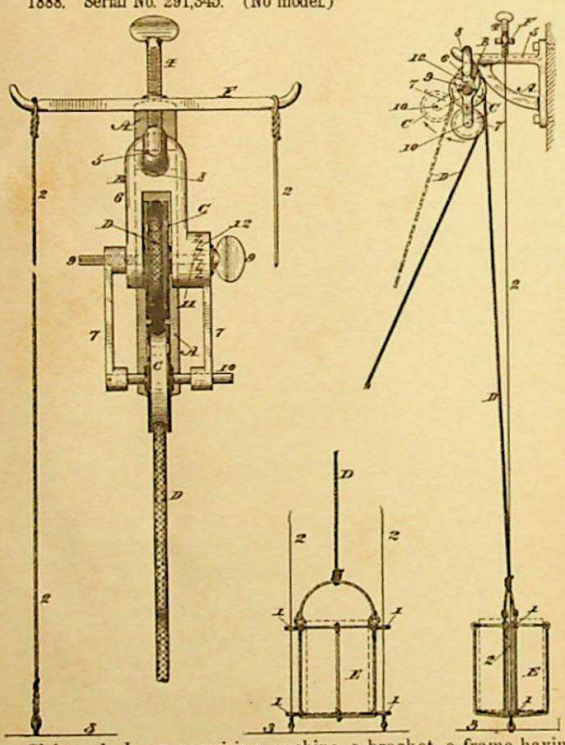
4. In an alternating-current meter, a secondary coil or conductor consisting of successively-narrowing rectangles of copper laterally joined together and enveloping that member of the mechanism to which motion is communicated by induction, substantially as shown.

5. In an alternating-current meter, a secondary coil or closed conductor consisting of copper circuits of low resistance, all in electrical multiple connection with each other, substantially as shown.

6. In an alternating-current meter, a secondary coil consisting of copper circuits of low resistance integrally joined together by a midrib, substantially as described.

7. In an alternating-current meter, a secondary coil made from a continuous shell of conducting material sawed into ribs and enveloping that member of the mechanism to which motion is communicated by induction, substantially as shown.

404,802. EXERCISING-MACHINE. JOSEPH J. SLEEPER, Camden, N. J., assignor to Ernest Y. Loomis, New York, N. Y. Filed Nov. 20, 1888. Serial No. 291,345. (No model.)



Claim.—1. In an exercising-machine, a bracket, a frame having pulleys thereon and depending from said bracket, a cord around said pulleys having a weighted cage on the end thereof, a cross-bar having a screw passing through the same with its point bearing against the top of the bracket, and wires secured to the ends of the cross-bar and serving as guides for said cage, said parts being combined substantially as described.

2. In an exercising-machine, a pulley-frame consisting of the two parts 6 and 7, the part 6 having a ratchet on its side, and the part 7 having a ratchet adapted to form a clutch with the ratchet of part 6, a connecting screw-bolt 9, and a pulley journaled on said bolt, a pin or shaft uniting the lower extremities of the part 7, and a pulley mounted on said pin or shaft, said parts being combined substantially as described.

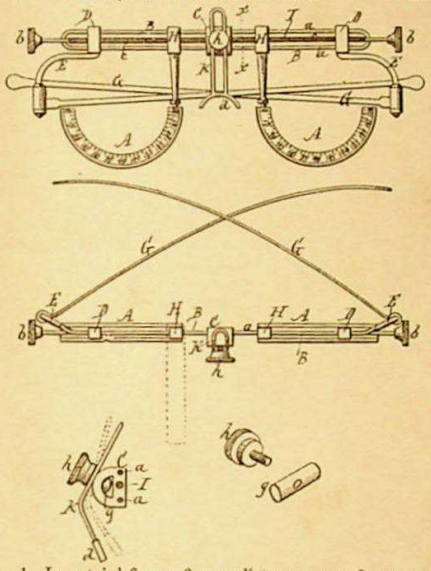
3. In an exercising-machine, a bracket with groove therein, a cross-bar with adjusting-screws, a two-part adjustable sectional frame depending from said bracket, pulleys mounted in said frame, a cord around said pulleys and carrying at one end a weighted cage, and wires secured to the ends of said cross-bars forming guides for said cage, said parts being combined substantially as described.

4. In an exercising-machine, a bracket, in combination with a two-part frame consisting of parts 6 and 7, part 6 having a side ratchet, and part 7 having a side arm with a ratchet adapted to engage with

the ratchet of part 6 and form a clutch, a pulley carried by part 7, a cord on said pulley carrying a weighted cage, and guides for said cage, said parts being combined substantially as described.

5. The guides for the weight, in combination with a bar attached thereto, a bracket supporting said bar, and a screw connecting said bar and bracket, whereby the guides may be adjusted in tension and position, substantially as described.

404,803. TRIAL-FRAME FOR OCULISTS AND OPTICIANS. ANDREW L. SMITH, Geneva, N. Y., assignor to the Geneva Optical Company, same place. Filed Sept. 3, 1887. Serial No. 248,674. (No model.)

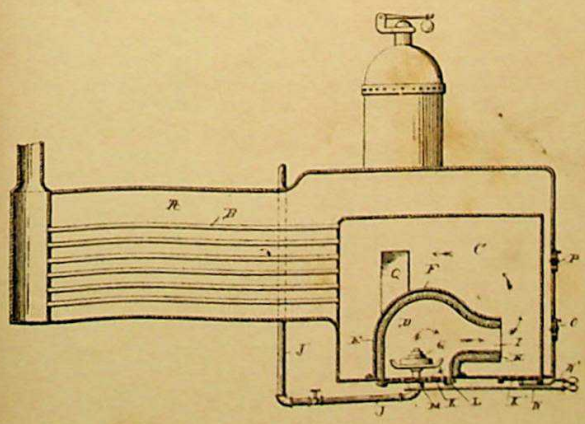


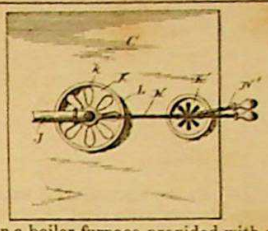
Claim.—1. In a trial-frame for oculists, an open frame consisting of two parallel rods, in combination with a central bearing-block through which said parallel rods pass, lens-frame bearing-nuts on each side of said central bearing-block, said nuts sliding on said parallel rods, and a right and left screw-rod parallel with and between said parallel rods and having its bearing in said central bearing-block and engaging with said sliding nuts to operate the same, substantially as set forth.

2. In a trial-frame for oculists, an open frame consisting of two parallel rods, in combination with a central bearing-block C, through which said parallel rods pass, lens-frame bearing-nuts H H on each side of said central bearing-block, and additional end nuts D D on each side of said central bearing-block, all of said nuts sliding on said parallel rods, and a right and left screw-rod parallel with and between said parallel rods having its bearing in said central bearing-block and engaging with said nuts H H and D D, substantially as set forth.

3. In a trial-frame for oculists, the frame-work thereof and the lens-holders adjustable thereon, in combination with the central bearing-block of said frame-work having its front face circular or segmental in shape, an adjustable nose bridge-piece resting against said circular or segmental face of the central block, an oscillating shaft mounted in said central block, and a clamping screw and nut engaging with the said shaft and clamping said nose bridge-piece against the face of said central block, substantially as set forth.

404,804. HYDROCARBON-BURNER. WILLIAM SNEE, Pittsburg, assignor to Charles T. Russell, Allegheny, and William Guckert and William Smith, both of Pittsburg, Pa. Filed Feb. 26, 1889. Serial No. 301,235. (No model.)

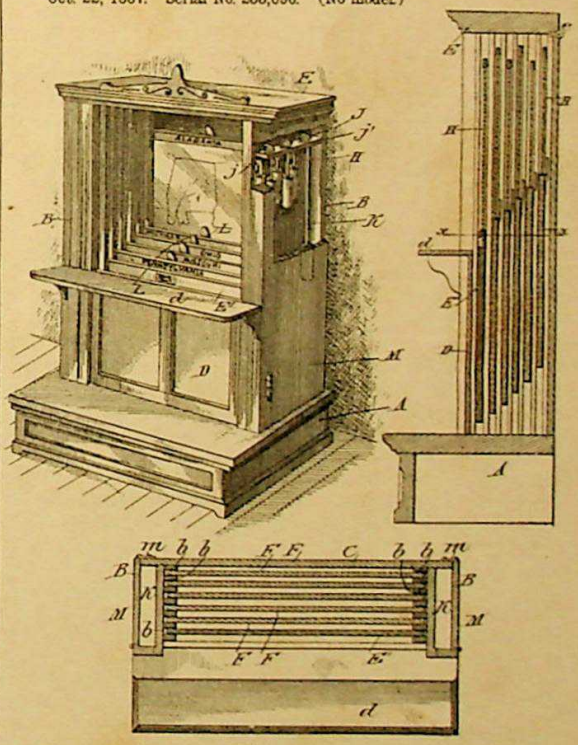




Claim.—1. In a boiler-furnace provided with a fire-box, the combination of the fire-box, the dome-shaped hood within the same bent downwardly and forwardly at its front side, the deflector arranged below the forward part of the hood, and the burner located below the arched top and within the hood, substantially as and for the purpose shown and set forth.

2. In a boiler-furnace provided with a fire-box, the combination of the exterior fire-box communicating with the flues of the steam-generator, the combustion-chamber located within the fire-box having an arched or dome-shaped top and narrow mouth or outlet facing the front end of the fire-box, the burner located within the combustion-chamber below its arched top and back of its outlet, the air-valve in the bottom of the combustion-chamber encircling the burner, and the bottom valve in the fire-chamber outside of the combustion-chamber, but below the outlet of the same, substantially as and for the purpose shown and set forth.

404,805. MAP-EXHIBITOR. WILLIAM A. TAYLOR, Washington, D. C., assignor of one-half to George W. Leesintzer, same place. Filed Oct. 22, 1887. Serial No. 253,096. (No model.)



Claim.—1. In a map-exhibitor, the combination of the sides having guides, the weights arranged outside of such guides, cords for connecting the weights with the maps, the short front piece, and the shelf provided thereon, all substantially as and for the purposes specified.

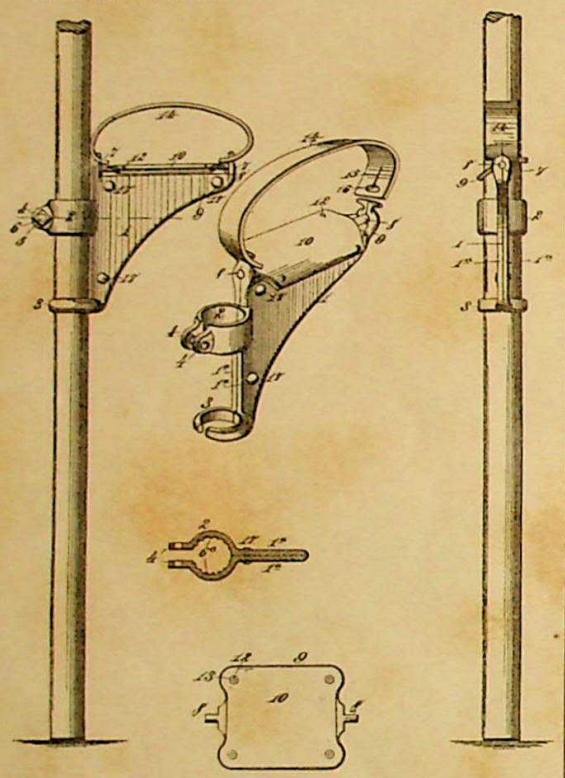
2. The map-exhibitor herein described, comprising the sides, the short front piece terminating below the upper ends of the sides, the shelf *d* at the upper end of said front piece, the maps movable in guides in said sides, the weights supported in wells in the sides, and the cords connecting the maps and weights, substantially as set forth.

3. In an exhibitor, substantially as described, the combination, with the framing having guides for the maps, &c., of the guide-pulleys arranged in two series—an inner series and an outer series—the pulleys of one series being arranged in line between those of the other series, substantially as and for the purposes specified.

4. The exhibitor, substantially as herein described and shown, consisting of the base, the sides having guides which terminate at their lower ends in different horizontal planes and extend at their upper ends to the upper ends of the sides, the front piece and the top hinged, whereby it may be moved from over the guides of the side pieces, substantially as set forth.

5. As an article of office-furniture, a map-chest constructed and arranged to hold a series of maps sliding in vertical grooves and being kept in position for easy inspection in parts by counterbalance-weights alone, the said chest having right and left double sides, forming two accessible lateral receptacles for the hanging and handling of the maps, and provided with a sliding front door or slide, substantially as set forth.

404,806. STILT. HENRY TEMPLE, Grand Rapids, Mich., assignor of one-half to William Harrison, same place. Filed Feb. 8, 1889. Serial No. 299,189. (No model.)



Claim.—1. The combination, in a stilt, of the step-bracket divided vertically into two separate and similar sections, each of which is provided with the semicircular part, of a clasp for embracing a staff, and an oscillating step-plate having end journals arranged and held between divided upwardly-projecting lugs of the two sections of the bracket, substantially as described.

2. In a stilt, an adjustable step-bracket provided with lugs which receive the journals of an oscillating step-plate, said lugs being provided with cross-heads forming fastenings for a detachable strap, substantially as described.

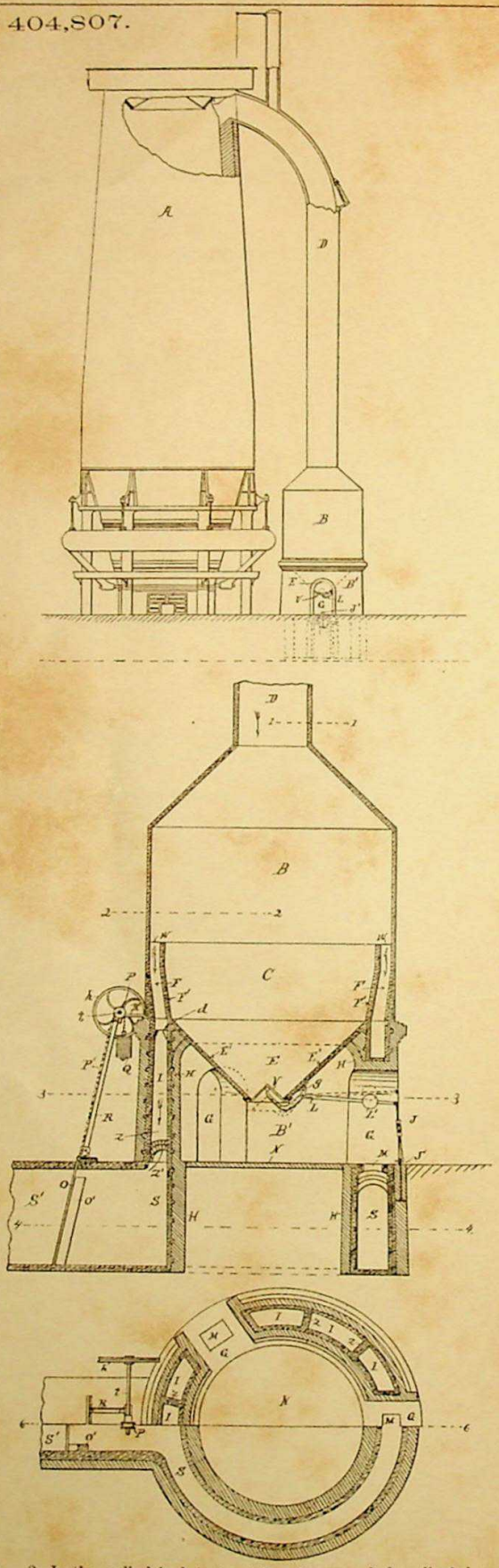
3. In a stilt, an adjustable step-bracket formed in two separate similar sections, each section having one member of the clasps, one part of each of the bearings for the oscillating step-plate and part of the cross-heads forming fastenings for a strap, each section being formed in a single integral piece and the two being united after the step-plate is inserted by suitable fastenings, substantially as described.

4. In a stilt, the combination, with the staff, of an adjustable foot-plate having two-part clasps engaging said staff, one of said clasps being provided with engaging-points and having lugs receiving a headed bolt having a tightening-nut, an oscillating step-plate having journals lying in lugs formed on said step-bracket, said step-plate being provided with a covering of suitable material, and a strap having slitted ends which engage T-shaped cross-heads formed upon the lugs which support the journals of the step-plate, substantially as described.

404,807. DUST-CATCHER FOR BLAST-FURNACES. FRANCIS H. TREAT, Joliet, Ill., assignor of two-thirds to Horace S. Smith and Charles Pettigrew, both of same place. Filed Apr. 6, 1888. Serial No. 269,809. (No model.)

Claim.—1. In the cylindrical dust-catcher shown and described, in combination with its outer wall, the inner wall arranged concentrically therein, and the space between said walls divided by cross-partitions forming vertical flues between said walls, the dust-receptacle supported concentrically within said inner wall and having vertical sides, and a funnel-shaped bottom provided with a discharge-opening controlled by a valve, substantially as and for the purpose set forth.

404,807.

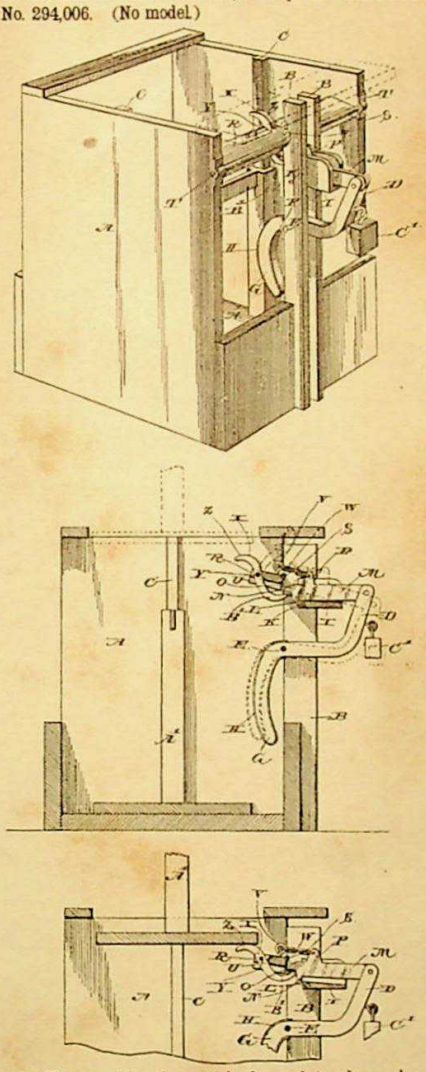


2. In the cylindrical dust-catcher shown and described, in combination with the outer wall, the inner wall arranged concentrically therein and the space between said walls divided by cross-walls forming a series of vertical exit-flues between said walls, the dust-receptacle supported concentrically within said inner wall and having ver-

tical sides and a funnel-shaped bottom, and the annular cover or shield secured to the inner side of said outer wall and immediately above said flues, substantially as and for the purpose set forth.

3. In the cylindrical dust-catcher shown and described, the combination, with the outer walls, and the dust-receptacle supported concentrically therein, said receptacle having vertical sides and a funnel-shaped bottom, of the vertical flues surrounding said receptacle, said flues being formed of two rows of vertical partitions, the upper row containing twice as many partitions as the lower, substantially as and for the purpose set forth.

404,808. ELEVATOR. ALEXANDER B. WALL, Colchester, Ill., assignor of one-half to Fred P. Blount, same place. Filed Dec. 18, 1888. Serial No. 294,006. (No model.)



Claim.—1. The combination, with the weighted cam-lever D, of the link M, the swinging support connnected to the link, and the trigger X, pivoted in said swinging support, substantially as described.

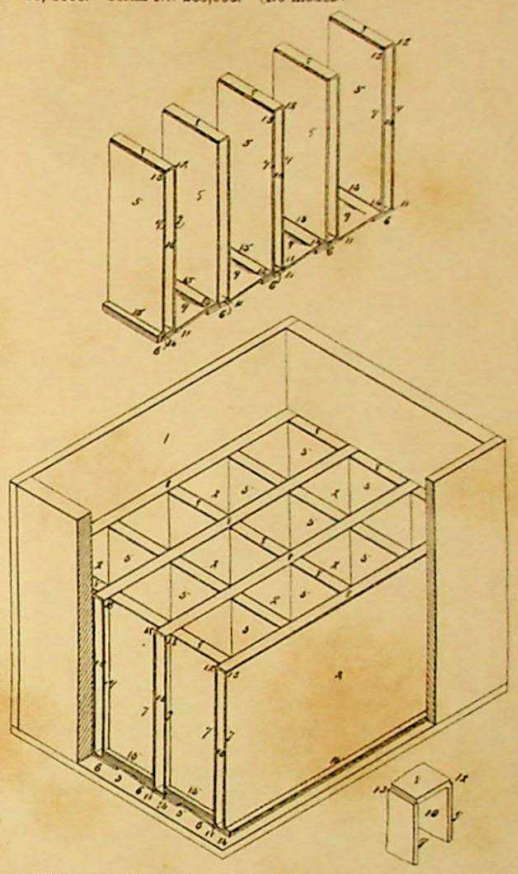
2. The combination, of the weighted cam-lever D, the saddle or support I, the link M, connected to lever D and adapted to engage the saddle, the pivoted board or support R, connected to the link, and the trigger X, pivoted to said board or support and having the arms Z and B′, for the purpose set forth, substantially as described.

3. The combination of the weighted lever D, having the cam-arm G, the saddle or support I, the link M, connected to lever D and having the shoulder adapted to engage the saddle or support, the rocking board or support R, the chain or connection between the same and the link, the trigger X, having the arms Z and B′, for the purpose set forth, and the car adapted to engage and operate the cam G and trigger X, substantially as described.

4. The combination, with the pivoted board or support R and the trigger X, swinging therein, of the weighted lever, and the link M and the chain connecting the weighted lever to the pivoted board or support R, to raise said swinging board or support R, substantially as described.

5. The pivoted support or board R, combined with the weighted lever D, having cam-arm G, the link M, and the chain connecting the board R and the lever D, and the trigger X on the board R, to engage the lever D, as set forth.

404,809. FOLDING BOTTLE-CASE. ENOS L. WALKER, St. Louis, Mo., assignor of one-half to Gabriel Hoyt, Brooklyn, N. Y. Filed Aug. 28, 1888. Serial No. 283,988. (No model.)



Claim.—1. A cellular packing for bottle-cases, comprising partitions of flexible material, each having parallel walls and a top and bottom, forming between them an inclosed air-space, substantially as and for the purpose set forth.

2. In cellular packing for bottle-cases, the combination of the partitions of flexible material, each having parallel walls and a top and bottom, forming between them an inclosed air-space, and a series of cross-partitions of the same construction placed at a right angle to the aforesaid partitions in the spaces between them, the two series of partitions constituting the cells to inclose the bottles, substantially as and for the purpose set forth.

3. In cellular packing for bottle-cases, the combination of the parallel-wall incasement-partitions constructed from an integral blank of flexible material which is cross-scored at 11, 12, 13, and 14 and folded at said cross-scores to form the foot-sections 6, double partition-incasement 7, surmounting-cap 8, and bottom section 9 of said partitions, and a series of interdivisional partitions of the same construction and placed at right angles to the aforesaid partitions in the spaces between the same, and together therewith constituting the cells that inclose the bottles, substantially as and for the purpose set forth.

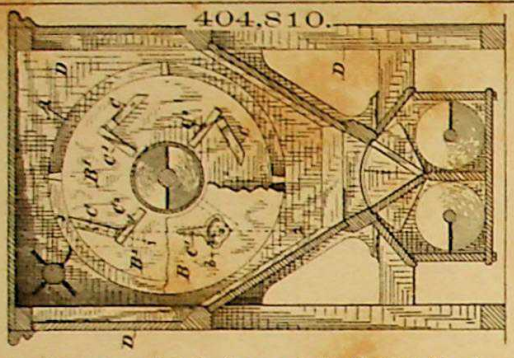
4. In cellular packing for bottle-cases, the combination of the parallel-wall incasement-partitions 2 of flexible material, cross-partitions 5 of the same construction, which partitions together constitute the bottle-cells, and elastic bottom cushions that are formed by the foot, and bottom sections that extend from the bottom of the partition and form a multiple elastic layer at the bottom of the cells beneath the bottles, substantially as and for the purpose set forth.

5. In cellular packing for bottle-cases, the combination of the parallel-wall incasement-partitions of flexible material, cross-partitions of the same construction, the partitions jointly constituting the bottle-cells, elastic bottom cushions formed by the foot, and bottom sections which extend from the bottom of the partitions and which cushion the bottom of the cells, and the line of stitches 15, that form flexible hinged connections of the sectional partitions, by which to erect the partitions for the package of bottles and fold them down for shipping empty, substantially as and for the purpose set forth.

404,810. BOLTING-REEL. JESSE WARRINGTON, Indianapolis, Ind., assignor to the Nordyke & Marmon Company, same place. Filed May 31, 1887. Serial No. 239,760. (No model.)

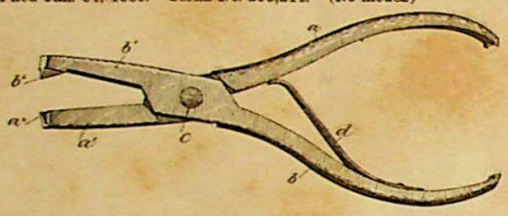
Claim.—The combination, with a bolting-reel, of one or more adjustable wings mounted in the head of its discharging end and sta-

404,810.



tionary wings arranged at the inner end of said adjustable wings and extending toward the center of the reel.

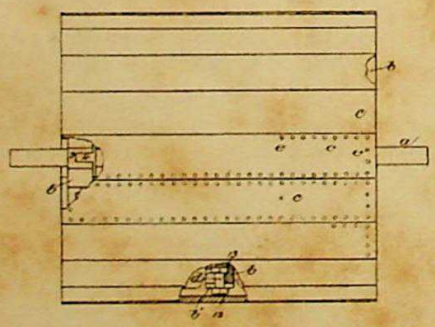
404,811. CARTRIDGE-CRIMPING TOOL. Friedrick Wichelhaus, Newark, N. J., assignor to Bailey, Farrell & Co., Pittsburg, Pa. Filed Jan. 31, 1889. Serial No. 298,211. (No model.)



Claim.—As a device for indenting cartridge-shells, pivoted jaws, one of which is provided at its end with a pyramidal or equivalent projection having its base outermost, and which is adapted to engage the exterior of the shell, and the other of which is provided with a recess or indentation the counterpart of said projection, substantially as and for the purposes described.

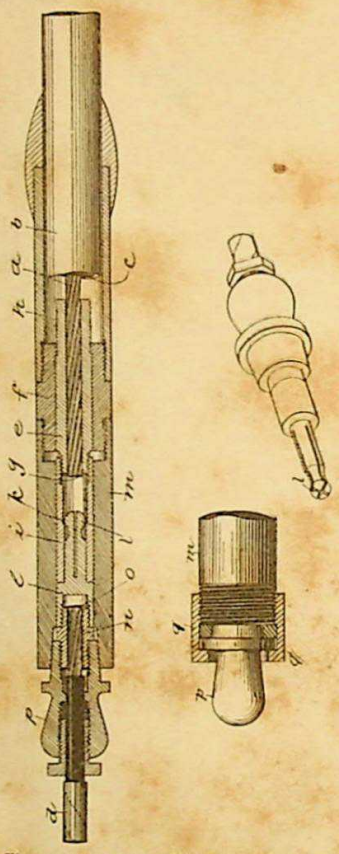
404,812. CYLINDER FOR CARDING OR OTHER MACHINES. George O. Wickers, Lawrence, assignor to the Davis & Furber Machine Company, North Andover, Mass. Filed July 30, 1888. Serial No. 281,395. (No model.)

Brief.—The invention consists in the improved construction of cylinders for carding-machines, &c., relating particularly to the formation of the surface on which rests the card-clothing.



Claim.—The herein-described cylinder, consisting, essentially, of a shaft, spiders thereon, and a series of metallic lags convexed at their outer faces and placed side by side to form the periphery of the cylinder, the said lags having longitudinal ribs at their inner sides provided with projections S, forming pockets for the reception of the heads of fastening-bolts, whereby the said lags are confined to the spider, and being provided with a series of nail-receiving plugs along their edges to receive the nails employed to hold the card-clothing in place, substantially as described.

404,813. ELECTRIC-CABLE TERMINAL. Robert H. Widdicombe, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Apr. 1, 1889. Serial No. 305,619. (No model.)



Claim.—1. The combination, with the lead pipe of a telegraph-cable, of a sleeve *h*, secured thereto by a wipe-joint, a metal sleeve *e* over the end of the conductor *a* and soldered thereto at *g*, a rubber coupling *f* between the sleeve *h* and the sleeve *e*, the tube *i*, adapted to receive a plug screwed over the end of sleeve *e*, and the rubber coupling *m*, placed over the same, substantially as and for the purpose specified.

2. The combination, with the insulated conductor *d*, of the terminal plug, said plug being provided with a handle *p*, through which the conductor *d* is inserted, packing being provided between the plug-handle and the insulating-covering of conductor *d*, said plug being inserted in a socket or tube *i*, substantially as and for the purpose specified.

PHOTO-LITH. NORRIS PETERS WASHINGTON, D.C.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

DECISIONS OF THE U. S. COURTS.

Supreme Court of the United States.

CORNELY *v.* MARCKWALD.

Decided May 13, 1889.

MEASURE OF DAMAGES.

The payment of a sum in settlement of a claim for an alleged infringement of a patent cannot be taken as a standard to measure the value of the improvements patented in determining the damages sustained by the owner of the patent in other cases of infringement.

APPEAL from the Circuit Court of the United States for the Southern District of New York.

Mr. B. F. Lee for the appellant.

Mr. W. A. Coursen for the appellee.

Mr. Justice BLATCHFORD delivered the opinion of the Court.

This is a suit in equity brought by Emile Cornely against Freeman D. Marckwald, for the alleged infringement of Letters Patent No. 83,910, granted to Cornely, as assignee of Antoine Bonnaz, the inventor, for an "improvement in sewing-machines for embroidering." There was an interlocutory decree for the plaintiff, establishing the validity of the patent and its infringement, and ordering a reference to a master to take an account of profits and damages.

The master reported that the defendant had made a profit of $142.92, by the sale of 26 infringing machines; and that he was not a willful and deliberate infringer. As to damages, he reported that the plaintiff had instituted 10 suits against other infringers on the patent, all of which, with one exception, were settled on the basis of $50 for each infringing machine; that the plaintiff claimed that that afforded a proper measure of damages, on the basis of an established license-fee; that there was a deviation in one instance because, as was stated by a witness, the case presented "circumstances of exceptional hardship," but what the circumstances were did not appear; that it did not appear that licenses were issued to any one other than in the settlement of a suit, or that the plaintiff had adopted the sum of $50 as a sum on the payment of which he was prepared to grant a license to any and all who wished to use the invention; and that the facts did not warrant the measurement of the damages by a fixed and established license-fee.

The master also reported that the plaintiff claimed that he had been forced to lower his prices to compete with the defendant; that the evidence did not show that any reduction in prices by the plaintiff was solely due to the acts of the defendant, or to what extent it was due to such acts; that as to damage to the plaintiff from the loss of the sale of machines which the defendant had sold, it did not appear what profits the plaintiff made on his machines, or what it cost to make them; and that, therefore, such damage could not be computed and could not be reported as exceeding the nominal sum of 6 cents.

The plaintiff excepted to the report, and, on a hearing, the court made a decree, (23 Blatchford, 163,) overruling the exceptions, and confirming the report, and awarding to the plaintiff the $142.92, with interest and costs, except the costs on the accounting subsequent to the master's draft report and the costs on the exceptions, which two items of cost it awarded to the defendant. The plaintiff has appealed from so much of the decree as awards to him no damages beyond the 6 cents.

The circuit court, in its opinion, held, that evidence of payments made for infringements was incompetent to establish a price as for a fixed royalty; that, as to loss by the plaintiff from the diversion of sales, he had failed to give any evidence showing the cost of his machines, or what his profits would have been; that, as there was no basis for a computation of the loss of profits, the determination of the master was correct; and that his conclusion was proper as to the alleged loss of the plaintiff by reason of the enforced reduction of his prices.

We concur in these views. As to the question of an established license-fee, the case is governed by the recent decision of this Court in *Rude* v. *Westcott*, (130 U. S., 152,) where it was held that the payment of a sum in settlement of a claim for an alleged infringement of a patent—

> cannot be taken as a standard to measure the value of the improvements patented, in determining the damages sustained by the owner of the patent in other cases of infringement.

Decree affirmed.

U. S. Circuit Court—Southern District of New York.

YOUNG *et al.* *v.* FOERSTER.

Decided January 8, 1889.

1. INFRINGEMENT—RIGHT TO USE AND IMPROVE A PATENTED MACHINE.

A machine purchased of the complainant, the patentee, by the employer of the defendant was repaired and its construction somewhat changed by the defendant in his capacity as an employé of the purchaser. *Held* that the purchaser was at liberty to repair and improve it within the limits of his contract, and that so long as the identity of the machine was not destroyed its owner had the right to discard useless parts and add new ones which might improve its action.

2. SAME—PARTIAL USE.

One who has a license to use the whole of a machine does not become an infringer by the use of a part only.

Mr. Edwin H. Brown for the complainants.
Mr. Arthur v. Briesen for the defendant.

COXE, *J.*:

This is an action of infringement based upon Letters Patent No. 224,760, granted to Hugh Young February 17, 1880, for an improvement in machines for sawing stones.

In August, 1879, John R. Smith purchased of Young for $4,700 a machine embodying the patented features, and received a license to operate it under patents then owned by Young and under all patents for improvements on the same which thereafter might be owned by him. On the 8th of July, 1882, Smith entered into another agreement whereby, for the additional sum of $300, he received a license to use the machine according to the patent in suit, which had been granted since the purchase, and to embody any improvement covered by that patent or any other patent owned or controlled by Young. During the period in controversy Smith was the owner of the machine. The defendant was in Smith's employ, receiving $3.50 daily wages. He never used the machine except as an employé of Smith. He had no interest in or control over it. Soon after it was purchased it broke down, and since that time has been frequently repaired. No machine similarly constructed can run for more than a month without undergoing repair, which involves putting in new parts and changing old ones. In the spring and summer of 1886, on account of the removal of Smith's place of business, a more thorough overhauling was necessary. At that time new feed-screws, fly-wheels, and sash-heads were put in, the old ones being worn out. The crank-shaft and some little bolts, pins, and nuts were worn out also, and new ones were substituted. The slides on which the saw-sash runs were lowered about two feet, and all the attachments for imparting a lift or push motion to the blade were left off. Lift-motion is now imparted to the sash by an incline at each end of the guide-bars. The defendant had supervision of this work as employé of Smith. The complainants contend that what was done in 1886 constitutes an infringement. Many of the parts just mentioned—namely, "the large screws at the sides, the nuts thereon, the sash, and the crank-shaft"—had been renewed from time to time prior to 1886 with the knowledge of the patentee.

The defenses are, first, that in doing the acts of which infringement is predicated the defendant acted merely as the agent of John R. Smith; second, that Smith had a right to use and repair the machine, and that the work done by the defendant was necessary to put it in order; third, that the patent is void for lack of novelty.

The defendant did not use or vend the patented machine, and it can hardly be said upon this evidence that he made it, assuming now that an entirely new machine was constructed. The defendant acted solely as agent for Smith. He received his daily wages only. He made nothing by the transaction. The complainants expressly waive an accounting. The parts renewed were purchased of outside dealers, and put into the machine by their workmen. Very little of the manual labor was done by the defendant. He acted simply as superintendent. All that he did was done for Smith's benefit and under Smith's directions. He was there to protect Smith's interests and see that the work was properly done. This was all. The proof fails to establish infringement and brings the case within the following authorities: *Hussey* v. *McCormick*, (1 Fish., 509;) *Estes* v. *Worthington*, (30 Fed. Rep., 465;) *United Nickel Co.* v. *Worthington*, (13 Fed. Rep., 393;) *Delano* v. *Scott*, (Gilp., 498.) But is any one responsible as an infringer? Had not the owner a right to repair and improve the machine in the manner stated? The machine had a capacity to saw a stone 12 feet long and 5 feet high. It was bulky and expensive. Smith paid the patentee $5,000 for it and the right to operate it, with all the improvements covered by all the patents controlled by the complainants. When the machine broke down, as it frequently did, Smith was not required to abandon it and procure a new one. He was at liberty to repair and improve it within the limits of his contracts. These repairs were often necessary—were made with the consent of the patentee. The repairs complained of consisted, principally, in restoring portions which were worn out. True, other portions were taken off or their use discontinued. But one who has a license to use the whole of a machine does not become an infringer because he uses a part only. So long as the identity of the machine is not destroyed its owner has a right to repair it—to discard useless parts and add new ones which may improve its action. These alterations, though they changed somewhat the mode of operation, were rendered necessary, because equivalent parts had become worn out. Their addition did not make it a new machine. By putting the old machine in working order its owner did what he had a right to do. (*Gottfried* v. *Conrad Seipp Brewing Co.*, 8 Fed. Rep., 322; *Chaffee* v. *Boston Belting Co.*, 22 How., 217, 223; *Wilson* v. *Simpson*, 9 How., 109; *Union M. Cartridge Co.* v. *U. S. Cartridge Co.*, 2 Ban. and Ard., 595; *Syracuse Plow Co.* v. *Robinson*, 35 Fed. Rep., 502; *Singer Mfg. Co.* v. *Springfield Foundry Co.*, 34 Fed. Rep., 393; *Aiken* v. *Manchester Print Works*, 2 Cliff., 435.)

It is of course unnecessary to pass upon the defense, which disputes the validity of the patent.

The bill is dismissed.

U. S. Circuit Court—Southern District of New York.

AM ENDE *v.* SEABURY & JOHNSON.

Decided November 15, 1888.

1. AM ENDE—COMPOSITION OF BORATED COTTON.

Letters Patent No. 181,024, granted August 15, 1876, to Charles G. Am Ende, for an improvement in borated cotton, *Held* valid and not anticipated by such preparations as "lint steeped in a hot saturated solution of boracic acid" or "wadding saturated with a certain quantity of glycerine" or boracic acid dissolved in glycerine.

2. DESCRIPTION.

The description in the specification of the patent, which, it should be remembered, is addressed to persons skilled in the particular art to which the invention relates, is sufficiently explicit to enable a person skilled in the art to practice the invention.

Mr. Arthur v. Briesen for the complainant.
Mr. Norman T. M. Melliss for the defendants.

COXE, *J.*:

The complainant is the owner of Letters Patent No. 181,024, granted to him August 15, 1876, for an improvement in borated cotton. The object of the inventor was to produce a simple and inexpensive antiseptic dressing by combining the various advantages of cotton fiber with those possessed by boracic acid and glycerine. The specification asserts that prior to the invention boracic acid had been used as a preservative agent only in a fluid state or as a powder, and that it was necessary to immerse the matter to be preserved in the fluid or cover it completely with the powder, requiring in either case large quantities of the acid. The inventor accomplishes a better and more permanent result in a much simpler and more convenient way by saturating the cotton with the acid and glycerine in small proportions, thus adding to their preservative properties the germ-filtering quality and elasticity of the cotton. The manner of producing the borated cotton is described in the specification as follows:

* * * I first prepare a solution of boracic acid in the usual manner, and add thereto a small proportion of glycerine. For the preservation of tender substances, such as veal, I may also add from ten to forty per cent. of soda or potash, never sufficient, however, to reach neutrality. The cotton, either in bulk or wadding, is next immersed in the solution until well impregnated therewith, and then pressed, to discharge all surplus solution, or so much thereof as may be required. The cotton is then dried and ready for use.

The claim is for—

The borated cotton, being cotton fiber which is saturated with boracic acid and glycerine, substantially as herein shown and described.

The defenses are that the specification is not so clear and explicit as to enable a person skilled in the art to practice the invention, and that the patent is void for lack of novelty and invention. Infringement is clearly established, and is not denied in the brief submitted for the defendants.

In considering the question presented by the first defense it should be remembered that the language criticized by the defendants is addressed to persons skilled in the particular art to which it relates. To a lawyer or a banker the specification might seem vague and, perhaps, meaningless; but a pharmacist, a chemist, or even an educated physician would have little difficulty in understanding it. When the patentee says he prepares "a solution of boracic acid in the usual manner" he means as it has formerly been prepared. He speaks of it as he would speak of a solution of camphor or alum. Every druggist knows what he means. He certainly might have been more definite when he says that he adds to this solution "a small proportion of glycerine;" but it is thought that the intelligent chemist, setting out properly to combine the enumerated ingredients into which the cotton is to be immersed, and with which it is to be impregnated, could hardly go astray. Indeed, in examining the extracts introduced by the defendants to establish lack of novelty, copied from pharmaceutical journals of conceded reputation and authority, we find similar language used. Thus, in the *Druggists' Circular and Chemical Gazette* it is stated that Dr. Edmunds had used "a solution of boracic acid," and in the *Journal de Pharmacie* it appears that Prof. Gubler saturated his wadding with "a certain quantity of glycerine." The formula for preparing this dressing is then given. "It is only necessary," says the writer, "to pour a small quantity of glycerine over the square sheet," &c. Such expressions would seem to belong to the nomenclature of the art. The expression "well impregnated" means thoroughly, completely impregnated, the word "well" being used in the sense that a housewife might use it when telling her domestic to keep the bread or the joint in the oven until well done. Tested by the rule of *Loom Co.* v. *Higgins*, (105 U. S., 580,) the specification would seem to be sufficient.

The article translated from the *Journal de Pharmacie et de Chimie* is not an anticipation. It is entitled "Glycerized Cotton for Dressing Wounds." There is no reference to boracic acid. Two of the elements of Am Ende's combination—boracic acid and water, the acid in solution—are wanting. True, it is stated that Prof. Gubler found this wadding permeable to all medicinal liquids; but there is no hint that he knew that with it could be combined the preservative properties of boracic acid in an uncrystallized condition as a convenient, effective, and permanent antiseptic composition.

The article in the *American Journal of Pharmacy* of March, 1867, shows great familiarity with the characteristics and uses of glycerine on the part of the writer. He knew its excipient, hygroscopic, and penetrating properties. He knew that it was a solvent for boracic acid; but he certainly did not know—at least, he did not divulge the knowledge—that it could be combined with dissolved boracid acid, and thus held in cotton fiber for antiseptic purposes.

The quotation from the *Druggists' Circular* of June, 1875, is entitled "Boracic Acid," and describes a case of amputation in which the surgeon employed a "dressing of lint steeped in a hot saturated solution of boracic acid." This dressing was probably applied in a moist condition to the wound. No glycerine was used.

It cannot be demonstrated from the proofs that any one prior to Am Ende accomplished what he has described and claimed. Even though there be a doubt, it should be resolved in favor of the patent. The fact that others had done something quite similar—that they had used separately, or in different combinations, the ingredients of his claim—should not affect his patent. All that is described in the prior publications the defendants may use with perfect impunity. They may use "lint steeped in a hot saturated solution of boracic acid," or "wadding saturated with a certain quantity of glycerine," or boracic acid dissolved in glycerine; but they should not be permitted to use cotton saturated with a solution of boracic acid and glycerine in the manner described in the specification, for that belongs to Am Ende.

The complainant is entitled to the usual decree.

U. S. Circuit Court—Eastern Judicial District of Missouri, Eastern Division.

TAFT *v.* THE STEPHENS LITHOGRAPHING AND ENGRAVING COMPANY.

Decided March 26, 1889.

1. COPYRIGHT—SECTION 4963 CONSTRUED—PENALTY.

The language of section 4963 Revised Statutes, providing a penalty for falsely marking articles "Copyrighted," is not "for

each copy," and while it may be true that if upon different days, under different circumstances, separate copies are printed, each transaction thus separate would constitute a separate offense, yet when the printing of many copies is a single continuous act only one offense is committed thereby.

2. SAME—SAME—ARTICLES NOT COPYRIGHTABLE.

The law is clear that no offense is committed when the word "Copyrighted" is placed upon an article that is not the subject-matter of copyright—that cannot be copyrighted.

3. DEMURRER.

It being alleged in the petition that the print is not the subject of copyright, the demurrer sustained.

ON demurrer to the petition.

Mr. W. E. Fisse for the plaintiff.

Mr. Paul Bakewell for the defendant.

BREWER, *J.*:

This is a demurrer to the petition. The action is a *qui tam* action brought by the plaintiff as informer under section 4963 of the Revised Statutes of the United States to recover the penalty therein named.

The petition alleges that the defendant printed and circulated 10,000 copies of a chromo, which is described, putting on each the word "Copyrighted" or some equivalent word.

The section provides that—

every person who shall insert or impress such notice, or words of the same purport, in or upon any book, map, chart, musical composition, print, cut, engraving, or photograph, or other article for which he has not obtained a copyright, shall be liable to a penalty of $100, recoverable one-half for the person who shall sue for such penalty and one-half to the use of the United States.

The petition alleges that the defendant thus printed and issued 10,000 copies, and plaintiff asks judgment for $100 penalty for each copy, or $1,000,000 in gross. All this is stated in one count. And one ground of challenge is that either there are 10,000 different causes of action which should each be stated in a separate count, or if there is but one cause of action, a single penalty of $100 only is recoverable and the amount prayed for is excessive. The plaintiff pleads the great trouble and inconvenience there would be in setting out 10,000 causes of action.

We think that the rule is unquestioned, and see no reason why it should be deviated from in a case like this.

Plaintiff is not suing for the value of his services or for injury to his property, but simply to make profit to himself out of the wrongs of others, and when a man comes in as an informer and in that attitude alone asks to have a half million dollars put into his pocket, the courts will never strain a point to make his labors light or his recovery easy. So that if each separate imprint is a separate cause of action, we have no doubt that the petition is demurrable as joining 10,000 causes of action in a single count. But we think that, fairly construed, there is only one cause of action stated.

The petition alleges—

that heretofore, to wit, on the 2d day of November, A. D. 1888, and at divers times between said day and the commencement of this action, the said defendant did engrave, print, publish, and sell to the number of 10,000 copies a certain print, &c.

Now, the language of the statute is not "for each copy," and while it may be true that if upon different days, under different circumstances, the defendant printed separate copies, each transaction thus separate would constitute a separate offense, yet when the printing of many copies is a single continuous act only one offense is committed thereby. We had a similar question under the election statutes a year or two since, where false registrations were charged. We held there that where several names were falsely registered and all done at one time and as a single continuous act, it constituted but one offense, although if registered on different days and under different circumstances they might constitute separate offenses. Here the allegation is that "on the 2d of November and at divers times thereafter." This of course suggests a separation at least in the matter of time. Yet if the pleader claims that there were separate and distinct offenses there should be a clear divergence of each transaction both as to time and circumstances, and the court in a quasi criminal action like this ought to hold the pleader to language free from doubt, and hold as to a pleading like this that it simply alleges a continuous action in the printing and issuing of these 10,000 copies, and as such states but a single offense.

Another ground of demurrer is that the chromo upon which the word "copyrighted" was placed was not the subject of copyright.

The law is clear that no offense is committed when the word "copyrighted" is placed upon an article that is not the subject-matter of copyright—that cannot be copyrighted. The law is designed to guard against deception, and no one is deceived when the word "copyrighted" is placed upon an article that cannot be copyrighted, such as a kitchen-stove or a railroad-car.

Now, the plaintiff in this case describes the chromo, and the description discloses an article which could be copyrighted, and if the petition stopped with this description it would doubtless be sufficient. But it goes further and alleges that—

said printing and chromo has not been copyrighted by the defendant or any other person, nor was the same subject to copyright under said laws.

Thus it appears that the averment of disability is not limited to the person, but is cast upon the print. It was not the subject of copyright. There is in this an apparent contradiction to that which might be inferred from the language of description. Counsel suggests that the thought he had was that under the particular circumstances this print could not be copyrighted, and it is possible that there might be circumstances which would thus at the time exclude this print from copyright, although in its nature it was the subject-matter of copyright. But in a criminal or quasi criminal action the pleading should be clear and consistent. The court is not called upon to strain any language to remove doubt or secure consistency. There should be no labored effort at reconciliation of apparently contradictory averments, at least when the pleading is challenged before trial. So, because it is alleged that the print was not the subject of copyright, we think the demurrer should be sustained, and it is so ordered.

Subsequent pleading may be prepared with reference to the views of the offense as above expressed.

Plaintiff will be granted 30 days in which to file an amended petition, and defendant 30 days thereafter to plead thereto.

ALPHABETICAL LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 4TH DAY OF JUNE, 1889.

Name, residence, and invention.	No.	Date.	Monthly volume.		Official Gazette.	
			Specification.	Drawing.	Volume.	Page.
Abbott, William L., and V. C. Killin, Chicago, Ill. Car-brake	404,373	June 4	1	1	47	1225
Abernethy, William. (See Dyer, Phillip, assignor.)						
Akerson, George, Weston, Mo. Straw-carrier	404,460	June 4	135	32	47	1251
Allen, Alexander, assignor to J. Sale, Toronto, Ontario, Canada. Card or ticket case	404,515	June 4	225	53	47	1267
Allen, Emma, Freeport, Ill. Whip-socket	404,668	June 4	441	111	47	1311
American Ring Company. (See Nobbs, Edward P., assignor.)						
Andre, Emil, assignor to F. Heuser & Co., Hanover, Germany. Pressure regulating or reducing valve	404,586	June 4	334	80	47	1288
Arenberg, Herman, assignor of one-half to G. J. Clark, Edgwood, Cal. Vehicle	404,461	June 4	136	32	47	1251
Aschenbach, Henry, South Orange, and J. W. Theobald, Newark, N. J. Harness saddle	404,669	June 4	442	111	47	1311
Ascheuer, Friedrich, assignor to Electric Cutlery Company, New York, N. Y. Razor	404,763	June 4	565	144	47	1337
Ashworth, Elijah, Manchester, county of Lancaster, England. Machine for securing clothing to carding-engines	404,587	June 4	336	80, 81	47	1289
Atkinson, Dwight R., Albany, assignor of one-half to J. E. Dodge, Waterford, N. Y. Rail-joint	404,764	June 4	565	145	47	1337
Austin, Frederick C. (See Bunnell, Morton G., assignor.)						
Austin, Frederick C. (See Miller, George N., assignor.)						
Austin, Frederick C. (See Moats, Ortus E., assignor.)						
Avedyk, Octave, Louvain, Belgium. Manufacturing and bottling aerated water	404,462	June 4	137	32	47	1251
Axtell, Henry A., Montague, Mass. Grindstone and mechanism for the same	404,670	June 4	443	111	47	1311
Babbs, Frank H., *et al.* (See Taylor, Elbert C., assignor.)						
Babcock, Isaac B., Newport Centre, Vt. Roller for leveling snow or roads	404,671	June 4	445	112	47	1311
Bailey, Charles J., Newton, Mass. Brush	404,588	June 4	339	81	47	1289
Bailey, Farrell & Co. (See Wichelhaus, Friedrick, assignor.)						
Bain, Robert E. M., St. Louis, Mo. Shutter for photographic cameras	404,375	June 4	5	1	47	1225
Bairstow, John. (See Shaffer and Bairstow.)						
Baker, William. (See Rider, Charles M., assignor.)						
Ball, Phinehas, assignor to Union Water Meter Company, Worcester, Mass. Rotary meter	404,374	June 4	2	1	47	1225
Ballantyne, James L., Newton, Mass., assignor to Nonantum Worsted Company, of Massachusetts. Dabbing-brush apparatus for combing-machines	404,376	June 4	6	2	47	1226
Barker, Cassius M. (See Dicer and Barker.)						
Barker, David, Canton, Ohio. Mold for making glass pads for horse-collars	404,766	June 4	568	145	47	1337
Barker, David, assignor to Canton Glass Company, Canton, Ohio. Mold for vault-lights	404,765	June 4	567	145	47	1337
Barnes, Elbridge F., New Haven, Conn. Convertible machine for grooving and sawing wood	404,377	June 4	8	2	47	1226
Barnes, Monroe, Bloomington, Ill. Road-cart	404,672	June 4	446	112	47	1311
Barrett, Edward, Fall River, Mass. Boiler-furnace	404,378	June 4	9	2	47	1226
Batt, Charles F., Brooklyn, N. Y. Folding chair for steamers, &c	404,589	June 4	339	81	47	1289
Bayless, William C., Mossy Creek, Tenn. Straw-cutter	404,379	June 4	10	3	47	1226
Beacham, Frederick L., *et al.* (See Reams, John V., assignor.)						
Belding Motor and Manufacturing Company. (See Slater, Henry B., assignor.)						
Bell Telephone Company of Canada. (See Brown, Charles W., assignor.)						
Bennett, George H., Brooklyn, N. Y. Core for casting	404,673	June 4	448	112	47	1312
Bernd, Adolph, *et al.* (See Levy, William M., assignor.)						
Best, Ezra. (See Butler, James C., assignor.)						
Bickford, Erskine F., assignor to Boston Rubber Shoe Company, Malden, Mass. Rubber boot	404,674	June 4	449	113	47	1312
Binsfeldt, Louis, and J. Chatean, Detroit, Mich. Combined door lock and hinge	404,590	June 4	340	82	47	1289
Birch, James H., Plattsburg, Mo. Double-pointed pin	404,675	June 4	449	113	47	1312
Blacker, Joseph S., *et al.* (See Treharn, Joseph L., assignor.)						
Blaine, George E., Dayton, Ohio. Car-truck	404,676	June 4	450	113, 114	47	1312
Blake, Eben W., *et al.* (See Grinnell, Eugene S., assignor.)						
Blix, Anthony J., Anaconda, Mont. Ter. Cartridge-belt	404,677	June 4	452	114	47	1313
Blount, Fred P. (See Wall, Alexander B., assignor.)						
Blum, Christian G., and P. Listeman, Collinsville, Ill. Roofing-tongs	404,678	June 4	453	114, 115	47	1313
Boice, Alvin S., New Richland, Minn. Lock	404,516	June 4	226	54	47	1267
Bonehill, Christopher G., Belmont Row, Birmingham, county of Warwick, England. Breech-loading fire-arm	404,380	June 4	13	3	47	1227
Boston Rubber Shoe Company. (See Bickford, Erskine F., assignor.)						
Botkin, Abram, Wilmington, Del., assignor of one-tenth to C. Udelewitz, Washington, D. C. Convertible chair	404,767	June 4	569	146	47	1338
Bottom, Turner D., New York, N. Y. Filament for incandescent electric lamps	404,463	June 4	138	.....	47	1251
Bourne, William S., Alton, Iowa. Wagon-body raiser	404,464	June 4	140	33	47	1252
Boyce, Thomas, New York, N. Y. Percolator	404,591	June 4	342	82	47	1290
Boyden, George A., assignor to Boyden Power Brake Company, Baltimore, Md. Release-valve for air-brakes	404,768	June 4	573	147	47	1338
Boyden Power Brake Company. (See Boyden, George A., assignor.)						
Boynton, Edward S., assignor to Campbell Printing Press and Manufacturing Company, New York, N. Y. Wrench	404,769	June 4	575	147	47	1338
Boynton, Edward S., assignor to Campbell Printing Press and Manufacturing Company, New York, N. Y. Pipe-wrench	404,770	June 4	576	147	47	1338

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Boynton, John W. (See Ostrom and Boynton.)						
Bradley, Charles S., Yonkers, N. Y. Electric motor	404,465	June 4	141	33	47	1252
Bradley, Charles S., Yonkers, N. Y. Alternating-current electric motor	404,466	June 4	143	33, 34	47	1252
Brelaz, George L. (See Pictet, Raoul P., assignor.)						
Breux, Joseph F., Vineland, assignor of one-half to W. H. Grosscup, Camden, N. J. Bicycle	404,771	June 4	576	148	47	1339
Briggs, John S., and W. E. Leach, San Buenaventura, Cal. Fruit-stoning machine	404,517	June 4	228	54	47	1267
Briggs, Joseph H. (See Kester, Jesse F., assignor.)						
Brinkmann, Henry, Philadelphia, Pa. Ratchet-drill	404,592	June 4	343	82	47	1290
Broomell, Thomas W., assignor of one-half to F. C. Burton, Erie, Pa. Machine for cutting key-seats	404,679	June 4	457	115	47	1314
Brotherton, Willard I., *et al.* (See Pickett, Chancy J., assignor.)						
Brown, Aaron L., Chicago, Ill. Filing-receptacle	404,772	June 4	577	148	47	1339
Brown, Arthur, and P. C. Payette, Detroit, Mich. Ruler	404,593	June 4	343	82	47	1290
Brown, Charles W., assignor to Bell Telephone Company of Canada, Montreal, Quebec, Canada. Telephone-support	404,680	June 4	459	115	47	1314
Brown, George J. (See McCusker, Bernard, assignor.)						
Brown, George S., Atlanta, Ga. Appliance for sick-beds	404,681	June 4	460	115	47	1314
Browne, Aldis D. (See Evans, French S., assignor.)						
Bryson, Andrew, Jr. (See Pendleton and Bryson.)						
Bryson, Andrew, Jr. (See Pendleton, Bryson, Tiers, and Moss.)						
Bryson, Andrew, Jr. (See Pendleton, Tiers, Bryson, and Moss.)						
Bryson, Andrew, Jr. (See Tiers, Pendleton, and Bryson.)						
Buchanan, Robert J., Pittsburg, Pa. Sash-fastener	404,467	June 4	146	34	47	1252
Bühler, Adolph, Reichenhall, Bavaria, Germany. Papeterie	404,594	June 4	344	83	47	1290
Bull, James E., Tracy City, Tenn. Car-coupling	404,468	June 4	147	34	47	1253
Bunce, William H., Jersey City, N. J., D. Slate and J. Rodda, Hartford, Conn., assignors to C. C. Woolworth and J. S. Graham, New York, N. Y. Machine for packaging postal-cards	404,773	June 4	579	148, 149, 150	47	1339
Bunnell, Morton G., assignor to F. C. Austin, Chicago, Ill. Road-scraping machine	404,774	June 4	581	150, 151	47	1340
Burgess, Robert, *et al.* (See Grinnell, Eugene S., assignor.)						
Burton, Frank C. (See Broomell, Thomas W., assignor.)						
Butler, James C., assignor of one-half to E. Best, Quincy, Ill. Smoke-consumer	404,775	June 4	587	151	47	1341
Buzzini, Salvatore J., New York, N. Y. Grate for ranges, stoves, and furnaces	404,595	June 4	347	83	47	1291
Byrnes, Iles E., *et al.* (See Whitlock, Ephraim J., assignor.)						
Cabell, Samuel G., Washington, D. C., assignor to Liquid Purifying Company, of West Virginia. Apparatus for purifying and aging liquors	404,682	June 4	461	116	47	1315
Caldwell, Frank G., Wheeling, W. Va. Sheet-metal package	404,596	June 4	349	84	47	1291
Campbell Printing Press and Manufacturing Company. (See Boynton, Edward S., assignor.)						
Cannell, William, Cleveland, Ohio. Electric railway	404,469	June 4	148	35	47	1253
Canton Glass Company. (See Barker, David, assignor.)						
Canton Glass Company. (See Henderson, Charles H., assignor.)						
Capen, Thomas W., assignor to Yale & Towne Manufacturing Company, Stamford, Conn. Friction clutch and brake	404,776	June 4	588	152	47	1341
Carr, Thomas W. (See Wilson, James F., assignor.)						
Carter, Benjamin L. (See Harrington and Carter.)						
Carter, Henry C., New York, N. Y. Cover for butter-tubs &c	404,597	June 4	350	87	47	1291
Carver, James W., Pawlet, Vt., assignor of two-thirds to G. L. Kelty, Brooklyn, N. Y. Sight for fire-arms	404,598	June 4	351	84	47	1291
Carver, James W., Pawlet, Vt., assignor of two-thirds to G. L. Kelty, Brooklyn, N. Y. Sight for fire-arms	404,599	June 4	352	84	47	1292
Casperson, Carl A., Forsbacka, Marzretchill, Sweden. Determining the temper of iron or steel	404,600	June 4	354	.....	47	1292
Chapman, Charles S., Kansas City, Mo. Cable-grip	404,601	June 4	355	85	47	1292
Chapman, John G. (See Cockcroft, Thomas S., assignor.)						
Chase, Sidney A., assignor of one-half to W. R. Mapes, Evart, Mich. Fire-alarm telegraph	404,518	June 4	232	55	47	1268
Chase, Sidney A., assignor of one-half to W. R. Mapes, Evart, Mich. Duplex fire-telegraph	404,519	June 4	235	55	47	1268
Chateau, John. (See Binsfeldt and Chateau.)						
Clark, Edward L., Pittsburg, Pa. Ingot-mold	404,381	June 4	14	4	47	1228
Clark, Edward L., Pittsburg, Pa. Casting steel ingots	404,382	June 4	15	4	47	1228
Clark, Edward L., Pittsburg, Pa. Bale-tie buckle	404,383	June 4	17	4	47	1228
Clark Electric Company. (See Clark, Ernest P., assignor.)						
Clark, Ernest P., assignor to Clark Electric Company, New York, N. Y. Regulator for dynamo-electric machines	404,602	June 4	356	85	47	1292
Clark, George J. (See Arenberg, Herman, assignor.)						
Clark, Walton, assignor to United Gas Improvement Company, Philadelphia, Pa. Apparatus for manufacturing gas	404,520	June 4	237	56, 57	47	1269
Clason, Roger W., *et al.* (See Reams, John V., assignor.)						
Clayton, Reginald B. B., London, England. Fork-guard	404,777	June 4	589	152	47	1341
Clute, Nicholas, Schenectady, N. Y. Feed-water heater and regulator	404,683	June 4	462	116, 117	47	1315
Cockcroft, Thomas S., Liverpool, county of Lancaster, assignor to J. G. Chapman, Birkenhead, England. Measuring-vessel	404,603	June 4	358	86	47	1293
Colven, James M., New York, N. Y. Safety-valve	404,684	June 4	466	117	47	1316
Comins, Irving E., Worcester, Mass. Device for holding cylinders while attaching card-clothing thereto	404,685	June 4	467	118	47	1316
Conrader, Rudolph, Erie, Pa. Grinding-machine	404,686	June 4	469	118	47	1316
Constantine, George B. (See Foulon, Peter J., assignor.)						
Continental Motor and Electrical Company. (See Gartner, Alfred, assignor.)						
Cook, M. C. (See Gillingham, Henry R., assignor.)						
Corcoran, Andrew J., Jersey City, N. J. Windmill	404,604	June 4	359	86, 87	47	1293
Cullen, Walter S., Kearney, N. J. Rack for washing and drying photographic plates	404,605	June 4	362	87	47	1294
Cunnyngham, Victor L., Pittsburg, Pa. Station-indicator	404,384	June 4	18	5	47	1228
Curley, Mark, *et al.* (See Murray, John P., assignor.)						
Daft, Leo, Plainfield, N. J. Voltmeter	404,470	June 4	150	35	47	1253
Daft, Leo, Plainfield, N. J. Electric railway	404,687	June 4	470	118	47	1317
Dagwell, Frank. (See Levoy and Dagwell.)						
Daine, Richard, Halifax, Nova Scotia, Canada. Cutlery	404,385	June 4	20	5	47	1229
Dangler Stove and Manufacturing Company. (See Ruppel, Henry, assignor.)						
Daue, Herman, Woodland, Wis. Water-reservoir	404,386	June 4	20	5	47	1229
Davis & Furber Machine Company. (See Wickers, George O., assignor.)						
Davis, George H., Washington, D. C., assignor to A. D. Klaber, New York, N. Y. Duplicating apparatus	404,778	June 4	590	153	47	1341
Davis, James L., Kimberton, Pa. Dray	404,688	June 4	471	119	47	1317
Davis, James M., assignor of one-half to S. Taylor, Hudnut, Ind. Table	404,689	June 4	473	119	47	1317
Davis, Robert, *et al.* (See Murray, John P., assignor.)						
De Brouwer, Joseph, Bruges, Belgium. Gas-washer	404,606	June 4	363	87	47	1294
De Vol, Ambrose L., Binghamton, N. Y. Hammer	404,388	June 4	22	5	47	1229
Deland, Frank A., Memphis, Mich. Attachment for lawn-mowers	404,690	June 4	474	120	47	1317

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Deland, Frank A., Memphis, Mich. Attachment for lawn-mowers	404,691	June 4	475	120	47	1318
Dell, John C., Philadelphia, Pa. Runner for grinding-mills	404,607	June 4	365	88	47	1294
Despain, Joseph H., assignor of one-half to D. O. Wallace, Kansas City, Mo. Cleansing and polishing compound	404,387	June 4	21	.....	47	1229
Dicer, William, and C. M. Barker, Albion, Mich. Breech-loading fire-arm	404,779	June 4	591	153, 154	47	1341
Dodge, J. Edward. (See Atkinson, Dwight R., assignor.)						
Donmoyer, Rudolph W., South Bend, Ind. Wheel-tire	404,692	June 4	476	120	47	1318
Douglass, Adelbert J., Ilion, N. Y. Crayon-rack for blackboards	404,389	June 4	23	6	47	1229
Dowd, Frank D., Cortland, N. Y. Water-conveyer	404,780	June 4	595	154	47	1342
Drake, Edwin S., Cambridge, Mass. Telephone-transmitter	404,471	June 4	151	35	47	1253
Dronsfield, Joseph S., Oldham, county of Lancaster, England. Card-grinding roller	404,608	June 4	367	88	47	1295
Duffy, Joseph, Passaic, N. J. Support for spinning-spindles	404,609	June 4	368	88	47	1295
Dunagan, Patrick H., Denver, Colo. Slime-separator	404,521	June 4	241	57	47	1270
Dunham, Charles L., Union City, Pa., assignor to W. F. Rupp, Chicago, Ill. Pipe-wrench	404,781	June 4	596	154	47	1342
Dunn, Ambrose C., assignor to Pneumatic Steering Gear and Manufacturing Company, New York, N. Y. Steering apparatus	404,472	June 4	152	35, 36	47	1254
Dutton, Andrew L., assignor to himself, W. B. Dutton, Racine, Wis., and M. M. Dutton, Chicago, Ill. Submarine search-light	404,390	June 4	24	6	47	1229
Dutton, Marshall M., *et al.* (See Dutton, Andrew L., assignor.)						
Dutton, Walter B., *et al.* (See Dutton, Andrew L., assignor.)						
Dyer, Phillip, assignor of one-half to W. Abernethy, Mooretown, Ontario, Canada. Gate-latch	404,391	June 4	26	6	47	1230
Eagle Pencil Company. (See Fischer, Frederick J. W., assignor.)						
Eames, Charles J., New York, N. Y. Reducing iron direct from its ores	404,473	June 4	157	36	47	1254
Easthope, Alfred, Wolverhampton, county of Stafford, England, assignor to A. H. Overman, Boston, Mass. Velocipede	404,693	June 4	476	120	47	1318
Ecaubert, Frederic, Brooklyn, N. Y. Making ring-dies	404,522	June 4	242	57	47	1270
Egner, Frederic. (See Harrison and Egner.)						
Egner, Frederic, and J. W. Harrison, St. Louis, Mo. Valve	404,392	June 4	27	6, 7	47	1230
Ehrlich, A. (See Sommerfeld, Heinrich, assignor.)						
Eishon, Catherine, *et al.* (See McCarty, William F. M., assignor.)						
Electric Cutlery Company. (See Ascheuer, Friedrich, assignor.)						
Elmendorf, Albert, assignor of one-half to S. A. Gardner and C. Prentis, New London, Conn. Water-closet	404,393	June 4	27	7	47	1230
Elmes, Charles F., Chicago, Ill. Hydraulic cylinder for controlling steam-cylinders	404,523	June 4	243	58	47	1270
Elwell, Herbert. (See Hovey, Frank A., assignor.)						
Engebretsen, Lars, Kampen, Christiania, Norway. Portable chair	404,610	June 4	369	88	47	1295
Eno, Joseph A., Newark, N. J. Steam-generator	404,524	June 4	246	58, 59	47	1270
Ensign, Frank H., Toledo, Ohio. Metallic wheel	404,611	June 4	370	89	47	1295
Eustis, John P., New York, N. Y. Holder for vessels	404,694	June 4	478	121	47	1318
Evans, French S., assignor of one-fourth to A. D. Browne, Washington, D. C. Umbrella or parasol	404,695	June 4	478	121	47	1318
Evans, James W., Kearney, Mo. Composite truss for barns	404,612	June 4	372	89	47	1296
Evans, W. A., *et al.* (See Kelly, John, assignor.)						
Faries, Robert, Decatur, Ill. Spring-motor	404,526	June 4	249	59, 60	47	1271
Farrell, John, Huntsville, N. J. Hay-carrier	404,525	June 4	247	59	47	1271
Fee, William R., Cincinnati, and J. S. Zerbe, Hartwell, Ohio, assignors, by mesne assignments, to National Cotton Seed Oil and Huller Company, Memphis, Tenn. Cotton-seed huller	404,696	June 4	479	121, 122	47	1319
Feister, Henry P., Philadelphia, Pa. Mechanism for cushioning traversing beds of reciprocating machinery	404,394	June 4	29	8	47	1231
Ferguson, Robert, St. Paul, Minn. Compound hydrocarbon-gas generator	404,527	June 4	250	60	47	1271
Fischer, Frederick J. W., assignor to Eagle Pencil Company, New York, N. Y. Spring holder or clasp for pens or pencils	404,697	June 4	482	122	47	1319
Follansbee, George S., Boston, Mass. Sealing device for water-meters	404,395	June 4	31	8	47	1231
Forster, Thomas V. (See Woodhouse and Forster.)						
Fort Wayne Electric Light Company. (See Slattery, Marmaduke M. M., assignor.)						
Foster, Charles E., Washington, D. C., assignor to Hydraulic Elevator Company, Chicago, Ill. Hydraulic engine	404,528	June 4	251	60	47	1272
Foster, Robert F., Baltimore, Md., assignor of one-half to A. J. Leith, New York, N. Y. Playing-card	404,782	June 4	597	155	47	1343
Foulon, Peter J., New York, assignor of one-half to G. B. Constantine, Brooklyn, N. Y. Argand lamp-burner	404,474	June 4	158	37	47	1254
Frick, Louis C. S., Buffalo, N. Y. Stuffing-box	404,529	June 4	253	61	47	1272
Frishmuth, William, Philadelphia, Pa. Portable electric lantern	404,698	June 4	482	122	47	1319
Frishmuth, William, Philadelphia, Pa. Galvanic battery	404,699	June 4	485	122	47	1319
Fuller, George P., Minneapolis, Minn. Nut-lock	404,530	June 4	255	61	47	1272
Fuller, Willard H., Passaic, N. J., assignor to Scovill Manufacturing Company, New York, N. Y. Camera-stand	404,396	June 4	32	8	47	1231
Gale, Andrew, and E. Tremblay, Chicopee, Mass. Swivel-plow	404,531	June 4	256	61	47	1273
Galland, Berthold, Scranton, Pa. Shirt	404,475	June 4	160	37	47	1255
Garber, Joseph A., Hatton, Kans. Sulky-plow	404,476	June 4	161	37	47	1255
Gardner, Harison B., *et al.* (See Randel, Zadock, assignor.)						
Gardner, Stephen A., *et al.* (See Elmendorf, Albert, assignor.)						
Garich, Robert, Chicago, Ill. Mash-machine	404,532	June 4	257	61	47	1273
Gartner, Alfred, Newark, N. J. Regulator for electric motors	404,783	June 4	599	155	47	1343
Gartner, Alfred, assignor, by mesne assignments, to Continental Motor and Electrical Company, Newark, N. J. Electric motor and regulator	404,533	June 4	259	62	47	1273
Gates, Eugene N., Fitchburg, Mass. Water-heater	404,784	June 4	601	155	47	1343
Gaume, Charles J. B., Brooklyn, N. Y. Motor for operating swinging devices	404,613	June 4	373	89	47	1296
Geiser, William, Salina, Pa. Device for ejecting oil from oil-wells	404,397	June 4	34	9	47	1232
Geneva Optical Company. (See Smith, Andrew L., assignor.)						
Gerstle, Gustave, *et al.* (See Treharn, Joseph L., assignor.)						
Gibson, Thomas B., Glasgow, county of Lanark, Scotland. Ornamental vessel or article	404,785	June 4	603	156	47	1343
Gifford, John, Watertown, N. Y. Combined hammock and canopy-support	404,614	June 4	374	90	47	1296
Gillingham, Henry R., assignor to M. C. Cook, Baltimore, Md. Packing for metallic boxes	404,700	June 4	486	123	47	1320
Giroux, Joseph E., Alpena, Mich. Grab-link for trace-chains	404,615	June 4	375	90	47	1297
Girvin, Laura O., and J. Loff, Chicago, Ill. Photographer's retouching-machine	404,534	June 4	260	62	47	1273
Godwin, John C., assignor to himself and W. C. Godwin, Lloyd, Tex. Cleaner for cotton-gin saws	404,616	June 4	377	90, 91	47	1297
Godwin, W. C. (See Godwin, John C., assignor.)						
Goode, William H. C. (See Kilborn, Wilber E., assignor.)						
Goodenough, Alvin D. (See James and Goodenough.)						
Goodfellow, James T., Huntingdon, Pa., assignor to Iron Car Company, of Connecticut. Car-body	404,535	June 4	262	62, 63	47	1274
Gordon, John H. (See Storle, Ole O., assignor.)						
Goulden, Samuel, Newark, N. J. Combined door-fastener and alarm	404,617	June 4	378	91	47	1297

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Goulliond, Louis, Montreal, Quebec, Canada, assignor to Union Bearing and Lubricator Company, Portland, Me. Dust-guard for car-axle boxes	404,701	June 4	486	123	47	1320
Graham, John S., *et al.* (See Bunce, Slate, and Rodda, assignors.)						
Greenleaf, Charles H., Boston, Mass., assignor of one-half to W. A. Tracy, Nashua, N. H. Hotel room-register	404,398	June 4	35	9	47	1232
Greenlee, Arthur C., Fergus Falls, Minn. Fuel-saving device	404,702	June 4	487	123	47	1320
Gridley, Frank J., New York, assignor to Underwriters Hatch Door Company, Brooklyn, N. Y. Self-closing hatchway	404,618	June 4	379	91	47	1297
Griffin, James M., *et al.* (See Willis, Don F., assignor.)						
Griffin, John S., *et al.* (See Willis, Don F., assignor.)						
Griffin, Patrick H., Buffalo, N. Y. Expansible mandrel	404,477	June 4	163	38	47	1255
Griffith, Thomas J. (See Roads and Griffith.)						
Grinnell, Eugene S., assignor of two-thirds to E. W. Blake and R. Burgess, Waltham, Mass. Loom-picker	404,478	June 4	164	38	47	1255
Gross, August. (See Klinik, Pinkowski, and Gross.)						
Grosscup, William H. (See Breux, Joseph F., assignor.)						
Guckert, William, *et al.* (See Snee, William, assignor.)						
Guignard, Louis P., Fluntern, near Zurich, and J. Schweizer, Unterstrass, near Zurich, Switzerland. Apparatus for burning petroleum or similar substances	404,399	June 4	36	10	47	1232
Gunckel, Winfield O., Terre Haute, Ind. Boiler feed-regulator	404,400	June 4	38	10	47	1233
Guthridge, Elijah, Fayette, Mo. Wire-stretcher	404,536	June 4	263	63	47	1274
Haish, Jacob, De Kalb, Ill. Railway-track	404,401	June 4	39	11	47	1233
Hall, William R., Philadelphia, Pa. Mold for the manufacture of artificial teeth	404,703	June 4	488	123	47	1320
Halliday Bros. (See Howes, Otis S., assignor.)						
Hammarlund, Oscar P., and E. Larson, Chicago, Ill. Sash-holder	404,537	June 4	264	63	47	1274
Hansing, Siegfried, New York, N. Y. Piano-action	404,704	June 4	489	124	47	1320
Hanson, Freeman, Hollis, assignor of one-half to C. B. Harmon, Biddeford, Me. Steam-pipe coupling	404,786	June 4	604	156	47	1344
Hardy, Emery E., Newark, N. J. Terret with separable shank	404,403	June 4	42	12	47	1234
Hardy, Thomas, Toronto, Ontario, Canada. Cart	404,402	June 4	41	11	47	1233
Harmon, Charles B. (See Hanson, Freeman, assignor.)						
Harper, Frank, Auburn, assignor to D. M. Osborne & Company, of New York. Grain-binding machine	404,479	June 4	164	38	47	1255
Harrington, Frederic, and B. L. Carter, Cleveland, Ohio. Umbrella-exhibitor	404,480	June 4	166	39	47	1256
Harris, Frank W., Napa, Cal. Device for oiling wheels	404,481	June 4	167	39	47	1256
Harris, Nathan, Boston, Mass. Implement for marking cloth	404,482	June 4	168	39	47	1256
Harrison, John W. (See Egner and Harrison.)						
Harrison, John W., and F. Egner, St. Louis, Mo. Apparatus for the manufacture of fuel and illuminating-gas	404,404	June 4	43	12	47	1234
Harrison, William. (See Temple, Henry, assignor.)						
Hastings, George W., Grafton, assignor to E. M. Wood, Natick, Mass. Polishing compound	404,483	June 4	169	.....	47	1256
Haughey, Michael, St. Louis, Mo. Carriage	404,405	June 4	45	12	47	1234
Hawkins, John T., Taunton, Mass. Pipe-wrench	404,619	June 4	380	92	47	1298
Hebdon, William, Boston, Mass. Machine for sponging cloth	404,620	June 4	381	92	47	1298
Heinzmann, William. (See Maeurer, Henry, assignor.)						
Helman, George S., *et al.* (See Kelly, John, assignor.)						
Henderson, Charles H., assignor to Canton Glass Company, Canton, Ohio. Grinding-machine	404,787	June 4	606	156	47	1344
Henry, Rene L. (See Henry, Robert G. and R. L.)						
Henry, Robert G., Waterbury, and R. L. Henry, Hamden, Conn. Buckle	404,406	June 4	47	13	47	1234
Herman, Emil J., assignor to Safety Hatch-Door Company, St. Louis, Mo. Self-closing hatchway	404,705	June 4	490	124	47	1320
Hermance, Robert, Schuylersville, N. Y. Tubular lantern	404,538	June 4	266	64	47	1275
Herzig, Eduard, West Hoboken, assignor to R. H. Simon, Union, N. J. Stop mechanism for looms	404,407	June 4	48	13	47	1234
Heuser & Co., Franz. (See Andre, Emil, assignor.)						
Heysinger, Isaac W., Philadelphia, Pa. Self-closing cover for inkstands, &c.	404,539	June 4	267	64	47	1275
Hibbert, William, Manchester, county of Lancaster, England. Apparatus for purifying atmospheric air	404,621	June 4	382	92	47	1298
Hicks, Oliver H., Chicago, Ill. Package of toilet-paper	404,622	June 4	384	92	47	1298
Hill, Joseph, and J. P. O'Donnell, London, county of Middlesex, England. Working and interlocking railway signals and points	404,408	June 4	51	13, 14	47	1235
Himmelstein, John, Milwaukee, Wis. Collar-fastener	404,409	June 4	52	14	47	1235
Hinds, John M., near Palmyra, Ind. Napkin-holder table attachment	404,410	June 4	53	14	47	1236
Hite, Thomas B., Seattle, Wash. Ter. Saw-swaging machine	404,623	June 4	385	93	47	1298
Hochhausen, William, Brooklyn, N. Y. Dynamo electric machine	404,484	June 4	169	39, 40	47	1256
Hohenstein, Hugo, New York, N. Y. Lamp-shade	404,540	June 4	272	64	47	1276
Holmes, Thomas J., Chicago, Ill. Safety appliance for stamping or other machines	404,624	June 4	386	93	47	1299
Hooker, William C., Abingdon, Ill. Gate	404,625	June 4	387	93	47	1299
Hopcraft, Lewis, Stamford Hill, county of Middlesex, England. Self-feeding-furnace grate	404,706	June 4	490	124	47	1320
Hovey, Frank A., Farmington Falls, assignor of one-half to H. Elwell, East Wilton, Me. Coffee-pot	404,707	June 4	491	124	47	1321
Howes, Otis S., assignor of one-half to Halliday Bros., Cairo, Ill. Apparatus for purifying water	404,485	June 4	173	40	47	1257
Hoyt, Gabriel. (See Walker, Enos L., assignor.)						
Hoyt, Lucius P., Aurora, Ill. Feed-roll for planing and surfacing machines	404,486	June 4	174	41	47	1257
Hubert, Philip G., New York, N. Y. Wash-basin	404,541	June 4	273	65	47	1276
Hubert, Philip G., New York, N. Y. Time-valve	404,542	June 4	275	65	47	1276
Huewe, George A., Cincinnati, Ohio. Necktie-holder	404,411	June 4	55	14	47	1236
Humphreys, Willis B., *et al.* (See Taylor, Elbert C., assignor.)						
Hunt, Joseph H., West Troy, N. Y. Steering center-board	404,626	June 4	388	94	47	1299
Hunton, Stephen W., Wilkinsburg, Pa. Sliding-door lock	404,412	June 4	55	15	47	1236
Hurrel, Cyrus F., Holton, Kans. Pipe-coupling	404,413	June 4	56	15	47	1236
Hursh, Abram, Yellow Springs, Ohio. Door-check	404,627	June 4	390	94	47	1299
Hyatt, John W., Newark, N. J. Apparatus for filtering	404,708	June 4	492	125	47	1321
Hyde, Elwin R., Springfield, Mass. Driving and belt-shifting mechanism	404,709	June 4	494	126	47	1321
Hydraulic Elevator Company. (See Foster, Charles E., assignor.)						
Imandt, Christian, New York, N. Y. Refinishing curtains	404,543	June 4	276	.....	47	1277
Interstate Fire Alarm Company. (See Ruddick, John J., assignor.)						
Iron Car Company. (See Goodfellow, James T., assignor.)						
James, John, and A. D. Goodenough, Henrietta, Tex. Shackle	404,544	June 4	276	66	47	1277
James, William P., Lincolnton, N. C. Spring back for stools or chairs	404,628	June 4	392	94	47	1300
Jenks Railway Car Signal Company. (See Jenks, Thomas M., assignor.)						
Jenks, Thomas M., assignor to Jenks Railway Car Signal Company, Chicago, Ill. Steam-tight coupler	404,710	June 4	498	126, 127	47	1322
Jernberg, August. (See Lindeström, Hjalmar, assignor.)						
Jernberg, August. (See Lindeström and Jernberg.)						
Jervey, Eugene P., Charleston, S. C. Railway-rail joint	404,487	June 4	177	41	47	1257

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Joel, Rosa, New York, N. Y. Washing-machine	404,545	June 4	277	66	47	1277
Johnson, Frank G., New York, N. Y. Water-current motor	404,488	June 4	178	41, 42	47	1258
Johnson, James W., Ladue, Mo. Cultivator	404,711	June 4	499	127	47	1322
Joly Stopper Company. (See Rehfuss, George, J. G., and M. O., assignors.)						
Jones, Albert F., Salem, Mass. Boiler-feeder	404,629	June 4	393	95	47	1300
Jones, Henry R., *et al.* (See Randel, Zadock, assignors.)						
Jones, William R., Braddock, Pa. Mixing molton pig metal	404,414	June 4	57	15	47	1237
Jones, William R., Braddock, Pa. Apparatus for mixing molton pig metal	404,415	June 4	60	16	47	1237
Joslin, Isaac R., and G. T. Lawrence, New York, N. Y. Wood-working tool	404,489	June 4	180	42	47	1258
Joyce, Joseph L., New Haven, Conn. Rubber boot or shoe	404,416	June 4	62	16	47	1237
Kelley, Harry E. (See Sears and Kelley.)						
Kelley, Harry E., Niagara Falls, assignor to Oneida Community, (limited,) Community, N. Y. Chain-fastener	404,631	June 4	396	95	47	1301
Kelley, Harry E., Niagara Falls, assignor to Oneida Community, (limited,) Community, N. Y. Swivel	404,632	June 4	397	96	47	1301
Kelly, George C., *et al.* (See Kelly, John, assignor.)						
Kelly, James J. (See Preston, William, assignor.)						
Kelly, John, assignor to himself, G. C. and O. Kelly, G. S. Helman, and W. A. Evans, Troy, Ohio. Fence-post	404,788	June 4	608	157	47	1344
Kelly, John F., assignor to United States Electric Lighting Company, Hoboken, N. J. Induction-coil	404,630	June 4	395	95	47	1301
Kelly, Orrin, *et al.* (See Kelly, John, assignor.)						
Kelty, Gibbons L. (See Carver, James W., assignor.)						
Kenworthy, John T., Flushing, N. Y. Drift and drill catch	404,546	June 4	278	66	47	1277
Kester, Jesse F., assignor of three-fourths to J. H. Briggs, Terre Haute, Ind. Detachable brush-holder for dynamos	404,712	June 4	500	127	47	1322
Kester, Jesse F., assignor of three-fourths to J. H. Briggs, Terre Haute, Ind. Armature-core for dynamos	404,713	June 4	501	128	47	1323
Kester, Jesse F., assignor of three-fourths to J. H. Briggs, Terre Haute, Ind. Regulator for dynamo-electric machines or motors	404,714	June 4	502	128	47	1323
Kester, Jesse F., assignor of three-fourths to J. H. Briggs, Terre Haute, Ind. Brush-spring for dynamos	404,715	June 4	504	128	47	1324
Kilborn, Wilber E., assignor of one-half to W. H. C. Goode, Sidney, Ohio. Wheelbarrow	404,789	June 4.	609	157	47	1344
Killin, Virgil C. (See Abbott and Killin.)						
Kimball, George, Lawrence, Kans. Wheel-plow	404,716	June 4	506	128, 129	47	1324
King, Homer A., Springfield, Mass. Velocipede	404,490	June 4	181	42	47	1258
King, Jonathan H., and B. F. Reed, Swan Creek, Ill. Car-coupling	404,717	June 4	507	129	47	1324
Kinney, Israel, Windsor, Ontario, Canada. Wire matting	404,417	June 4	63	16	47	1237
Kintner, Charles T., Philadelphia, Pa. Skate-roller	404,547	June 4	279	66	47	1278
Kirkham, Henry P., Brooklyn, N. Y. Coffer-dam	404,718	June 4	508	129	47	1325
Kiskadden, Robert A., Allegheny, Pa. Device for operating car-brakes	404,418	June 4	64	17	47	1238
Klaber, Augustus D. (See Davis, George H., assignor.)						
Klinik, Constantine C., F. Pinkowski, and A. Gross, Königshütte, Prussia, Germany. Hydraulic punching-machine	404,633	June 4	398	96	47	1301
Knaus, Joseph H., Fayette, Mo. Furniture-drawer	404,790	June 4	610	157	47	1345
Knight, George M., Adrian, Mich. Grate-bar	404,719	June 4	509	130	47	1325
Knopff, Wilhelm, Berlin, Germany. Incubator	404,634	June 4	399	96, 97	47	1302
Kroeschell, Herman A., Chicago, Ill. Steam-heating device	404,419	June 4	65	17	47	1238
La Dow, Charles, Albany, N. Y. Pulverizing-harrow	404,791	June 4	610	157	47	1345
Larson, Emil. (See Hammarlund and Larson.)						
Lawrence, George T. (See Joslin and Lawrence.)						
Leach, Willis E. (See Briggs and Leach.)						
Lebel, Florian, Levis, Quebec, Canada. Carriage-axle	404,635	June 4	400	97	47	1302
Leesintzer, George W. (See Taylor, William A., assignor.)						
Leith, Alexander J. (See Foster, Robert F., assignor.)						
Levoy, Herman, and F. Dagwell, Cincinnati, Ohio. Automatic extinguisher for car-stoves	404,420	June 4	66	17	47	1238
Levy, William M., assignor of two-thirds to A. Bernd and Rothschild Brothers, St. Louis, Mo. Holder and packing-frame for hats	404,636	June 4	401	97, 98	47	1302
Lewis, David, J. H. Williams, and M. Matthews, Anaconda, Mont. Ter. Calcining-furnace	404,720	June 4	509	130	47	1325
Lindeström, Hjalmar, assignor of one-half to A. Jernberg, Englewood, Ill. Mower	404,549	June 4	282	67	47	1278
Lindeström, Hjalmar, and A. Jernberg, Chicago, Ill. Cutting apparatus	404,548	June 4	280	67	47	1278
Lines, John, assignor to Scovill Manufacturing Company, Waterbury, Conn. Curtain-ring	404,637	June 4	402	98	47	1302
Lines, John, assignor to Scovill Manufacturing Company, Waterbury, Conn. Curtain-ring	404,638	June 4	403	98	47	1302
Liquid Purifying Company. (See Cabell, Samuel G., assignor.)						
Listeman, Philip. (See Blum and Listeman.)						
Loff, John. (See Girvin and Loff.)						
Logan, Jane, *et al.* (See McCarty, William F. M., assignor.)						
Loomis, Ernest Y. (See Sleeper, Joseph J., assignor.)						
Machtanz, Heinrich, Hanau, Prussia, Germany. Cigar-holder	404,644	June 4	409	100	47	1303
Mack, James M., Philadelphia, Pa. Guide-bar for lining up the curves of street-surfaces	404,491	June 4	182	43	47	1259
Maehr, Frank, Brooklyn, N. Y. Combined lamp and toilet-case	404,421	June 4	67	17, 18	47	1238
Maeurer, Henry, assignor of one-half to W. Heinzmann, Brooklyn, N. Y. Window	404,792	June 4	612	158	47	1345
Manning, Edwin C., Washington, D. C. Coffin	404,639	June 4	404	98	47	1302
Mapes, William R. (See Chase, Sidney A., assignor.)						
Marrder, Charles A., New York, N. Y. Car-heating apparatus	404,492	June 4	183	43	47	1259
Mathieson, John, Glasgow, county of Lanark, Scotland. Shuttle-box mechanism for looms	404,640	June 4	405	99	47	1302
Matthews, Maggie. (See Lewis, Williams, and Matthews.)						
Maxwell, William A., and O. E. Meddaugh, Lakeport, Cal. Cough-sirup	404,422	June 4	68	.....	47	1239
McBoyle, Joseph, Oakland, Cal. Folding vehicle	404,494	June 4	186	44	47	1259
McCarter, John G., Boston, Mass. Machine for cutting cloth into strips	404,645	June 4	410	100, 101	47	1303
McCarthy, William J., Menominee, Mich. Lock-house for switch-stands	404,646	June 4	411	101	47	1304
McCarty, William F. M., assignor of part to J. Logan, Hagerstown, Md., C. Eishon, Philadelphia, Pa., and H. D. Wallbridge. Producing steel direct from ore	404,723	June 4	512	131	47	1325
McCusker, Bernard, assignor of one-half to G. J. Brown, Bridgeport, Conn. Hat-wire machine	404,647	June 4	412	101, 102	47	1304
McDonald, Alexander J., Chicago, Ill. Railway-gate	404,724	June 4	514	131	47	1326
McDonough, John J. (See Welch, Michael I., assignor.)						
McFarland, James M., Columbus, Ohio. Slate-cleaner	404,795	June 4	616	159	47	1346
McKeand, Sampson S., Ceredo, W. Va. Car-coupling	404,725	June 4	515	131, 132	47	1326
McNair, David F., Wilkes-Barré, Pa. Trousers-stretcher	404,648	June 4	416	103	47	1304
Meddaugh, Oscar E. (See Maxwell and Meddaugh.)						
Meier, John H., Philadelphia, Pa. Baker's oven	404,641	June 4	407	99	47	1303
Merrill, George W. (See Pearce and Merrill.)						
Messer, Louis, New York, N. Y. Frame for pocket-books or other articles	404,721	June 4	510	130	47	1325

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Michigan Radiator and Iron Manufacturing Company. (See Taylor, Harrison H., assignor.)						
Middleton, Lee, Clarksville, Mo. Water-wheel	404,642	June 4	408	99, 100	47	1303
Miller, George N., Ashton, assignor to F. C. Austin, Chicago, Ill. Road-scraper	404,793	June 4	614	158	47	1345
Mitchell, Alfred W., *et al.* (See Taylor, Elbert C., assignor.)						
Mitchell, John J., Birmingham, Ala. Grate attachment	404,423	June 4	68	18	47	1239
Moats, Ortus E., assignor to F. C. Austin, Chicago, Ill. Road-scraper	404,794	June 4	615	158	47	1346
Moliere, George W., Ocean View, Cal. Checkrein-hook	404,643	June 4	409	100	47	1303
Moore, Joseph E., Warwick, Mass. Bed-bottom and means for tightening and supporting the same	404,722	June 4	511	130	47	1325
Moss, Lincoln. (See Pendleton and Moss.)						
Moss, Lincoln. (See Pendleton, Bryson, Tiers, and Moss.)						
Moss, Lincoln. (See Pendleton, Tiers, Bryson, and Moss.)						
Murray, John P., assignor of two-thirds to R. Davis and M. Curley, Jersey City, N. J. Packing for piston-rods	404,493	June 4	185	44	47	1259
National Cotton Seed Oil and Huller Company. (See Fee and Zerbe, assignors.)						
Netter, Charles, New York, N. Y. Railway-rail fastener	404,550	June 4	283	67	47	1278
Nicholson, Edward. (See Pettengill, Frederick B., assignor.)						
Nickerson, William E., Cambridge, Mass. Self-regulating hydraulic elevator	404,726	June 4	516	132	47	1326
Nobbs, Edward P., assignor to American Ring Company, Waterbury, Conn. Drawer-pull	404,495	June 4	188	44	47	1260
Nogar, Russell H., Dundee, Mich. Ditching-plow	404,424	June 4	69	18	47	1239
Noiseux, Samuel J., Somerville, Conn. Shuttle-binder for looms	404,649	June 4	417	103	47	1305
Nonantum Worsted Company. (See Ballantyne, James L., assignor.)						
Noonen, John T., Laramie, Wyoming Ter. Carriage-top	404,650	June 4	418	103	47	1305
Nordyke & Marmon Company. (See Warrington, Jesse, assignor.)						
North, Caleb C. (See Summers, Benjamin, assignor.)						
North, Charles F., Cohoes, N. Y. Under-vest	404,551	June 4	284	67	47	1278
Nusly, Vinzent, Sandusky, Ohio. Car-coupling	404,552	June 4	285	68	47	1279
O'Donnell, John P. (See Hill and O'Donnell.)						
Obenchain, John T., Logansport, Ind. Boiler-cleaning apparatus	404,425	June 4	72	19	47	1240
Oehmen, George F., New York, N. Y. Unison device	404,426	June 4	75	19	47	1240
Oldfield, Leonidas H., Newton, Kans. Stove-pipe anchor and flue-cleaner	404,553	June 4	288	68	47	1279
Oneida Community. (See Kelley, Harry E., assignor.)						
Oneida Community. (See Sears and Kelly, assignors.)						
Osborne & Company, D. M. (See Harper, Frank, assignor.)						
Ostrom, Freeland W., Bridgeport, and J. W. Boynton, Stratford, assignors to Wheeler & Wilson Manufacturing Company, Bridgeport, Conn. Cutting mechanism for button-hole sewing-machines	404,427	June 4	77	19	47	1241
Overman, Albert H. (See Easthope, Alfred, assignor.)						
Paca, John P. (See Paca, William S., assignor.)						
Paca, William S., assignor of one-half to J. P. Paca, Baltimore, Md. Safety attachment for electric motors	404,651	June 4	419	103	47	1305
Packard, Justin E., Mendocino, Cal. Fly-trap	404,727	June 4	518	132	47	1326
Page, Wilfred, Penn's Grove, Cal. Two-wheeled vehicle	404,496	June 4	188	45	47	1260
Paine, George S., Wyandotte, Mich. Oil-burner	404,428	June 4	80	20	47	1242
Palmer, Charles E., New Haven, Conn. Veterinary mouth-speculum	404,652	June 4	420	104	47	1306
Palmer, Theron H., San Bernardino, Cal. Carpenter's chisel	404,554	June 4	289	68	47	1280
Palmquist, Peter J. (See Swenson, Alfred, assignor.)						
Parker, Fred D., Denver, Colo. Shuttle and race mechanism for sewing-machines	404,555	June 4	289	69	47	1280
Parker, Lewis C., and B. Voges, Cincinnati, Ohio. Clothes-wringer	404,653	June 4	421	104	47	1306
Parker, Stearns & Sutton. (See Pfanne, Carl A. G., assignor.)						
Payette, Peter C. (See Brown and Payette.)						
Payson, Joseph R., Jr., Chicago, Ill. Spring-hinge	404,556	June 4	290	69	47	1280
Pearce, Spain E., and G. W. Merrill, Algonac, Mich. Hose-coupling	404,429	June 4	81	20	47	1242
Pendleton, John H. (See Tiers, Pendleton, and Bryson.)						
Pendleton, John H., Brooklyn, and A. Bryson, Jr., assignors to Rapid Transit Cable Company, New York, N. Y. Means for operating trains upon cable railways	404,497	June 4	189	45, 46	47	1260
Pendleton, John H., Brooklyn, and L. Moss, assignors to Rapid Transit Cable Company, New York, N. Y. Guide-pulley for cable railways	404,498	June 4	193	47	47	1261
Pendleton, John H., Brooklyn, C. Tiers, A. Bryson, Jr., and L. Moss, assignors to Rapid Transit Cable Company, New York, N. Y. Grip for cable railways	404,499	June 4	196	47, 48	47	1261
Pendleton, John H., Brooklyn, A. Bryson, Jr., C. Tiers, and L. Moss, assignors to Rapid Transit Cable Company, New York, N. Y. Endless belt for grips for cable railways	404,500	June 4	199	48	47	1262
Pettengill, Frederick B., assignor of one-half to E. Nicholson, Rosedale, Kans. Steam-valve governor	404,796	June 4	617	159	47	1347
Petterson, Ludwig, Chicago, Ill. Box-fastener	404,728	June 4	519	133	47	1327
Pettigrew, Charles, *et al.* (See Treat, Francis H., assignor.)						
Pfanne, Carl A. G., assignor to Parker, Stearns & Sutton, Brooklyn, N. Y. Hair-curling device	404,501	June 4	201	48	47	1262
Phelps, Homer L., Athens, Pa. Rotary steam-engine	404,557	June 4	292	69	47	1280
Phillips, George H., Geneva, N. Y. Range	404,502	June 4	202	48	47	1262
Pickett, Chancy J., assignor of two-thirds to W. I. Brotherton and H. N. Watrous, Bay City, Mich. Coffee-cleaning machine	404,430	June 4	82	20	47	1242
Pickett, Lyman B., Montrose, Pa. Sled	404,432	June 4	87	21	47	1242
Pictet, Raoul P., Geneva, assignor of one-half to G. L. Brelaz, Lausanne, Switzerland. Disintegrating fibrous materials	404,431	June 4	84	21	47	1242
Pinkowski, Friedrich. (See Klinik, Pinkowski, and Gross.)						
Plummer, Frank J., Philadelphia, Pa. Wood-planing machine	404,433	June 4	87	21, 22	47	1242
Pneumatic Steering Gear and Manufacturing Company. (See Dunn, Ambrose C., assignor.)						
Poe, Isaac N., assignor to Union Manufacturing Company, Toledo, Ohio. Wash-board	404,729	June 4	520	133	47	1327
Post, Henry H., Oswego, N. Y. Machine for manufacturing cylindrical rods	404,654	June 4	422	104, 105	47	1306
Prentis, Charles, *et al.* (See Elmendorf, Albert, assignor.)						
Preston, Clarissa, Pittsburg, Pa. Pan for baking and roasting	404,558	June 4	293	69	47	1280
Preston, William, assignor of one-half to J. J. Kelly, Brooklyn, N. Y. Grain-press	404,655	June 4	424	106	47	1306
Priest, Edward D., Lynn, Mass. Track-moistening apparatus for electric railways	404,559	June 4	294	70	47	1280
Pugh, Cortez V., Vandalia, Mo. Buggy-top spring	404,434	June 4	89	22	47	1243
Rae, Julio H., Milford, Del. Boiler-feed	404,730	June 4	521	133	47	1327
Ramsay, Robert, Mount Pleasant, Pa. Apparatus for shifting cars	404,656	June 4	426	106, 107	47	1307
Randel, Zadock, assignor of two-thirds to H. B. Gardner and H. R. Jones, De Kalb, Mo. Washing-machine	404,731	June 4	522	134	47	1327
Rapid Transit Cable Company. (See Pendleton and Bryson, assignors.)						
Rapid Transit Cable Company. (See Pendleton, Bryson, Tiers, and Moss, assignors.)						
Rapid Transit Cable Company. (See Pendleton and Moss, assignors.)						
Rapid Transit Cable Company. (See Pendleton, Tiers, Bryson, and Moss, assignors.)						
Rapid Transit Cable Company. (See Tiers, Pendleton, and Bryson, assignors.)						
Raymond & Co., George E. (See Raymond, Silas H., assignor.)						
Raymond, Silas H., assignor to G. E. Raymond & Co., Grand Rapids, Mich. Vehicle-spring	404,560	June 4	295	70	47	1281

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Reams, John V., assignor of two-thirds to F. L. Beacham and R. W. Clason, Midland, Mich. Automatic guard for railways	404,435	June 4	89	22	47	1243
Reed, Benjamin F. (See King and Reed.)						
Rehfuss, George, J. G., and M. O., assignors to Joly Stopper Company, Philadelphia, Pa. Bottle-stopper	404,797	June 4	621	159	47	1347
Rehfuss, John G. (See Rehfuss, George, J. G., and M. O.)						
Rehfuss, Martin O. (See Rehfuss, George, J. G., and M. O.)						
Reidl, Joseph, Lewiston, Idaho Ter. Necktie-fastener	404,436	June 4	90	23	47	1243
Reisinger, James W. H., Meadville, Pa. Addressing-machine	404,732	June 4	523	134	47	1327
Reynolds, Benjamin F., Chicago, Ill. Warm-air furnace	404,561	June 4	296	70	47	1281
Reynolds, Stephen D., Nevada, Mo. Bicycle	404,562	June 4	298	71	47	1281
Rheubottom, Homer E., assignor to Rheubottom & Teall Manufacturing Company, Weedsport, N. Y. Bustle	404,798	June 4	622	159, 160	47	1347
Rheubottom & Teall Manufacturing Company. (See Rheubottom, Homer E., assignor.)						
Richardson, Marcus F. (See Wisner, Andrew J., assignor.)						
Rider, Charles M., assignor of one-half to W. Baker, Newark, N. J. Device for automatically operating the stop-cock of a gas-burner	404,733	June 4	524	134	47	1328
Roads, Joseph W., and T. J. Griffith, Marion, Ohio. Burglar-alarm	404,734	June 4	525	135	47	1328
Roberts, George A., Paducah, Ky. Car-roof	404,735	June 4	526	135	47	1328
Robertson, Gideon. (See Russell, William H., assignor.)						
Rodda, James. (See Bunce, Slate, and Rodda.)						
Root, Miles C., Toledo, Ohio. Wheel	404,657	June 4	427	107	47	1308
Ross, William, Troy, N. Y. Fluid-pressure regulator	404,503	June 4	203	49	47	1263
Ross, William, Troy, N. Y. Fluid-pressure regulator	404,504	June 4	206	49	47	1263
Rothschild Brothers *et al.* (See Levy, William M., assignor.)						
Ruddell, Charles H., Terrell, Tex. Cultivator	404,437	June 4	91	23	47	1243
Ruddick, John J., Richmond, Ind., assignor, by mesne assignments, to Interstate Fire Alarm Company, Omaha, Nebr. Non-interfering fire-alarm signal-box	404,438	June 4	92	23	47	1243
Rupp, William F. (See Dunham, Charles L., assignor.)						
Ruppel, Henry, assignor to Dangler Stove and Manufacturing Company, Cleveland, Ohio. Safety oil-can attachment for vapor-stoves	404,439	June 4	95	24	47	1244
Russell, Charles T., *et al.* (See Snee, William, assignor.)						
Russell, William H., Vancouver, British Columbia, Canada, assignor of one-third to G. Robertson. Freight elevating and transporting apparatus	404,658	June 4	428	107	47	1308
Saarbach, Ludwig, New York, N. Y. Purifying tannic extracts	404,440	June 4	97	.....	47	1244
Safety Hatch-Door Company. (See Herman, Emil J., assignor.)						
Sale, Julian, (See Allen, Alexander, assignor.)						
Sands, Josias J., Merton, Wis. Bottle-stopper	404,799	June 4	623	160	47	1347
Sanford, John L., assignor of one-half to J. F. Stephenson, Albany, N. Y. Wick-trimmer	404,736	June 4	527	135	47	1328
Schmidt, Gustav, Rheine, Prussia, Germany. Car-starter	404,563	June 4	300	71	47	1281
Schott, Arnold. (See Schreiner and Schott.)						
Schreiner, Friedrich, and A. Schott, Philadelphia, Pa. Matrix for stereotyping	404,564	June 4	301	71	47	1282
Schröder, Heinrich L. H., 17 Althorp Road, Upper Tooting, assignor to J. Stuart, Clapham, county of Surrey, England. Aplanatic lens	404,506	June 4	210	50	47	1264
Schroeder, Gottlieb W., Huntington, Ind. Stock-pump	404,737	June 4	528	135	47	1328
Schuyler, Albert S., Pennington, N. J. Fly-trap	404,565	June 4	301	72	47	1282
Schweizer, Jakob. (See Guignard and Schweizer.)						
Scott, Walter, Plainfield, N. J. Dampening apparatus for rolls of paper	404,505	June 4	208	49, 50	47	1263
Scovill Manufacturing Company. (See Fuller, Willard H., assignor.)						
Scovill Manufacturing Company. (See Lines, John, assignor.)						
Sears, John F., Clifton, Ontario, Canada, and H. E. Kelley, Niagara Falls, assignors to Oneida Community, (limited,) Community, N. Y. Swivel	404,659	June 4	430	107	47	1308
Seymour, Charles J., Brookline, Mass. Elevator and conveyer	404,660	June 4	431	108	47	1309
Shafer, Ebenezer B., New York, N. Y. Telegraph apparatus	404,507	June 4	211	50	47	1264
Shaffer, George H., and J. Bairstow, Kent, Ohio. Lifting-jack	404,800	June 4	624	160	47	1348
Shallenberger, Oliver B., Rochester, assignor to Westinghouse Electric Company, Pittsburg, Pa. Distribution by alternating electric currents	404,566	June 4	302	72	47	1282
Shallenberger, Oliver B., Rochester, assignor to Westinghouse Electric Company, Pittsburg, Pa. System of generators for alternating electric currents	404,567	June 4	304	72	47	1282
Shaw, George F. (See Shaw, Henry F. and G. F.)						
Shaw, Henry F., Boston, and G. F. Shaw, Dedham, Mass. Motive mechanism for railway-cars	404,441	June 4	98	24	47	1244
Shaw, Irvin A., Kinsley, Kans. Combination-lock	404,568	June 4	305	73	47	1283
Shira, William M., Butler, Pa. Churn	404,569	June 4	307	73	47	1283
Shore, Anthony L., Minneapolis, Minn. Hydrocarbon-burner	404,442	June 4	99	24	47	1245
Sigourney Bros. (See Wright, Wilbur L., assignor.)						
Simon, Rand H. (See Herzig, Eduard, assignor.)						
Simonds, Daniel, Fitchburg, Mass. Apparatus for straightening saws	404,738	June 4	529	136	47	1328
Slate, Dwight. (See Bunce, Slate, and Rodda.)						
Slater, Henry B., Detroit, Mich., assignor to Belding Motor and Manufacturing Company, Chicago, Ill. Electric motor	404,661	June 4	433	108	47	1309
Slattery, Marmaduke M. M., assignor to Fort Wayne Electric Light Company, Fort Wayne, Ind. Electric meter for alternate currents	404,801	June 4	625	160, 161	47	1348
Sleeper, Joseph J., Camden, N. J., assignor to E. Y. Loomis, New York, N. Y. Exercising-machine	404,802	June 4	627	161	47	1348
Smith, Andrew L., assignor to Geneva Optical Company, Geneva, N. Y. Trial-frame for oculists and opticians	404,803	June 4	628	161	47	1349
Smith, Horace S., *et al.* (See Treat, Francis H., assignor.)						
Smith, John D., Murfreesborough, Tenn. Exhaust mechanism	404,739	June 4	531	136	47	1329
Smith, William, *et al.* (See Snee, William, assignor.)						
Smith, William A., Butte City, Mont. Ter. Piano lamp-bracket	404,570	June 4	308	73	47	1283
Smith, William H., Hickman, Tenn. Heating and steaming grain	404,571	June 4	308	73	47	1283
Snee, William, Pittsburg, assignor to C. T. Russell, Allegheny, W. Guckert, and W. Smith, Pittsburg, Pa. Hydrocarbon-burner	404,804	June 4	629	161	47	1349
Snee, William, assignor of part to W. Smith, Pittsburg, C. T. Russell, Allegheny, and W. Guckert, Pittsburg, Pa. Steam-generator	404,740	June 4	532	136	47	1329
Sommerfeld, Heinrich, Canton, assignor to A. Ehrlich, Lehigh, Kans. Churn	404,443	June 4	100	25	47	1245
Spiro, Simon, Birmingham, Ala. Water-heater	404,572	June 4	310	74	47	1284
Steddom, Henry, Jr., Oskaloosa, Iowa. Wire-weaving apparatus	404,444	June 4	100	25	47	1245
Stephenson, John F. (See Sanford, John L., assignor.)						
Stodard, Andrew M., Eureka, Kans. Weather-strip	404,445	June 4	101	25	47	1245
Stoltze, Henry, Sr., Manitowoc, Wis. Apparatus for raising quicksand	404,741	June 4	533	137	47	1329
Stone, George W., Jr., Waukesha, Wis. Locomotive-cab seat	404,662	June 4	434	109	47	1309
Storie, James D., Oshawa, Ontario, Canada. Feed mechanism for chain-link machines	404,742	June 4	534	137	47	1330
Storle, Ole O., Milwaukee, Wis., assignor of one-half to J. H. Gordon, Rochester, N. Y. Grain-binder	404,508	June 4	212	50, 51	47	1264
Stout, Isaac, Mackinaw, Ill. Car-coupling	404,743	June 4	539	138	47	1331
Stover, Cochran C., Bradford, Pa. Well-pumping rig	404,744	June 4	540	138	47	1331

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Straub, Alfred H. F., Los Angeles, Cal. Steam-engine	404,573	June 4	311	74	47	1284
Stuart, John. (See Schröder, Heinrich L. H., assignor.)						
Stut, John C. H., San Francisco, Cal. Valve-gear for compound engines	404,509	June 4	216	51, 52	47	1264
Summers, Benjamin, Petersburg, assignor of one-half to C. C. North, Huntingdon, Pa. Stamp-canceler	404,574	June 4	313	75	47	1284
Swem, James M., Denver, Colo. Mechanism for operating switch-points	404,446	June 4	102	25	47	1245
Swenson, Alfred, Greenview, assignor to P. J. Palmquist, Menard, Ill. Car-coupling	404,575	June 4	314	75	47	1284
Taylor, Elbert C., Humansville, assignor of three-fourths to W. B. Humphreys, F. H. Babbs, Stockton, and A. W. Mitchell, Humansville, Mo. Filling teeth	404,745	June 4	540	138	47	1331
Taylor, Harrison H., assignor to Michigan Radiator and Iron Manufacturing Company, Detroit, Mich. Machine for assembling radiator-loops	404,746	June 4	541	138, 139	47	1331
Taylor, Silas. (See Davis, James M., assignor.)						
Taylor, William A., assignor of one-half to G. W. Leesintzer, Washington, D. C. Map-exhibitor	404,805	June 4	631	162	47	1349
Teed, Charles W., Elmira, N. Y. Fish-hook guard	404,747	June 4	544	139	47	1332
Tefft, Charles B., Utica, N. Y. Attachment for stoves or ranges	404,748	June 4	544	139	47	1332
Temple, Henry, assignor of one-half to W. Harrison, Grand Rapids, Mich. Stilt	404,806	June 4	632	162	47	1350
Thake, John, *et al.* (See Whitlock, Ephraim J., assignor.)						
Thatcher, Walter R., Oskaloosa, Iowa. Hay-cap	404,577	June 4	322	77	47	1286
Thayer, Albert F., Maple Hill, Kans. Car-dumping apparatus	404,447	June 4	105	26	47	1246
Theobald, John W. (See Aschenbach and Theobald.)						
Thompson, Frank H., and G. P. Tormey, Philadelphia, Pa. Device for securing tools to handles	404,663	June 4	435	109	47	1309
Tiers, Cornelius. (See Pendleton, Bryson, Tiers, and Moss.)						
Tiers, Cornelius. (See Pendleton, Tiers, Bryson, and Moss.)						
Tiers, Cornelius, New York, N. Y., J. H. Pendleton, Brooklyn, and A. Bryson, Jr., assignors to Rapid Transit Cable Company, New York, N. Y. Grip for cable railways	404,576	June 4	315	75, 76, 77	47	1285
Tillson, Isaiah N., Whitman, Mass. Mechanism for extinguishing the lights in railway-cars	404,749	June 4	545	140	47	1332
Tompkins, Alfred S., Holmwood, Caterham, county of Surrey, England. Portable cooking-stove and untensils	404,578	June 4	323	77	47	1286
Toquet, Benjamin L., Westport, Conn. Hair-curling implement	404,664	June 4	436	109	47	1310
Toraya, José F., Havana, Cuba, assignor to Toraya Patent Gas Company, Philadelphia, Pa. Apparatus for the manufacture of gas	404,750	June 4	547	140	47	1333
Toraya Patent Gas Company. (See Toraya, José F., assignor.)						
Tormey, George P. (See Thompson and Tormey.)						
Tracy, William A. (See Greenleaf, Charles H., assignor.)						
Trapp, Edward A., Brooklyn, N. Y. Drip-pan for elevated railways	404,751	June 4	549	140	47	1333
Treat, Francis H., assignor of two-thirds to H. S. Smith and C. Pettigrew, Joliet, Ill. Dust-catcher for blast-furnaces	404,807	June 4	633	162, 163	47	1350
Treharn, Joseph L., assignor of two-thirds to J. S. Blacker and G. Gerstle, Cincinnati, Ohio. Shoe-sewing machine	404,448	June 4	106	26	47	1246
Tremblay, Eucher. (See Gale and Tremblay.)						
Treweek, Joseph, Lead City, Dak. Ter. Tool-car for mines	404,510	June 4	219	52	47	1265
Trott, Charles F. (See Whiting, William S., assignor.)						
Tully, James W., San Francisco, Cal. Adjustable attachment and extension for fire-ladders	404,511	June 4	220	52	47	1265
Turman, William F., Weatherford, Tex. Rein-holder	404,579	June 4	324	78	47	1286
Udelewitz, Carpel. (See Botkin, Abram, assignor.)						
Underwriters Hatch Door Company. (See Gridley, Frank J., assignor.)						
Union Bearing and Lubricator Company. (See Goullioud, Louis, assignor.)						
Union Manufacturing Company. (See Poe, Isaac N., assignor.)						
Union Manufacturing Company. (See Van Horn, Nathaniel R., assignor.)						
Union Water Meter Company. (See Ball, Phinehas, assignor.)						
United Gas Improvement Company. (See Clark, Walton, assignor.)						
United States Electric Lighting Company. (See Kelly, John F., assignor.)						
Uren, Stephen, Sacramento, Cal. Slot-making attachment for bolt-heading machines	404,580	June 4	325	78	47	1287
Vail, Joseph, Garden Grove, Iowa. Felt boot	404,449	June 4	113	27	47	1247
Vail, Jonathan H., New York, N. Y. Feed-water heater	404,512	June 4	221	53	47	1265
Van Horn, Nathaniel R., assignor to Union Manufacturing Company, Toledo, Ohio. Cover for sewing-machines	404,752	June 4	550	141	47	1333
Vaughn, James M., Water Valley, Ky. Hand-power saw	404,753	June 4	551	141	47	1334
Vaughn, John W., Jersey City, N. J. Automatic ticket-selling machine	404,450	June 4	114	27	47	1247
Voges, Bernhard. (See Parker and Voges.)						
Waggoner, George H., Leslie, Mich. Bevel	404,451	June 4	116	27	47	1247
Wakeman, Wilbur F., Kansas City, Mo. Temporary binder	404,513	June 4	222	53	47	1266
Walker, Enos L., St. Louis, Mo., assignor of one-half to G. Hoyt, Brooklyn, N. Y. Folding bottle-case	404,809	June 4	636	163, 164	47	1351
Walker, Joseph, near Manchester, Va. Gate	404,754	June 4	553	141	47	1334
Wall, Alexander B., assignor of one-half to F. P. Blount, Colchester, Ill. Elevator	404,808	June 4	635	163	47	1351
Wallace, Dwight O. (See Despain, Joseph H., assignor.)						
Wallbridge, Hernan D., *et al.* (See McCarty, William F. M., assignor.)						
Ward, Charles L., Cavendish, Vt. Car-door	404,755	June 4	554	141	47	1334
Ward, Randolph G., Baltimore, Md. Machine for scraping the pulp, &c., from fibrous plants	404,756	June 4	555	142	47	1335
Warrington, Jesse, assignor to Nordyke & Marmon Company, Indianapolis, Ind. Bolting-reel	404,810	June 4	638	164	47	1351
Watrous, Henry N., *et al.* (See Pickett, Chancy J., assignor.)						
Webber, Hiram L., Stafford, Kans. Tree-protector	404,757	June 4	558	143	47	1335
Webster, Fred L., Danvers, Mass. Machine for paring squashes	404,452	June 4	117	28	47	1248
Weissbrod, Emil, Greenfield, Mass. Pocket or note book	404,758	June 4	559	143	47	1336
Welch, Michael I., Valdosta, assignor of one-half to J. J. McDonough, Savannah, Ga. Valve-gear	404,453	June 4	118	28	47	1248
Western Electric Company. (See Widdicombe, Robert H., assignor.)						
Westinghouse, Electric Company. (See Shallenberger, Oliver B., assignor.)						
Wheeler, Seth, Albany, N. Y. Making perforations in paper	404,581	June 4	327	78, 79	47	1287
Wheeler, Seth, Albany, N. Y. Machine for making perforations in paper	404,582	June 4	329	79	47	1287
Wheeler & Wilson Manufacturing Company. (See Ostrom and Boynton, assignors.)						
White, John S., Portland, Me. Window-screen	404,454	June 4	120	29	47	1248
Whiting, William S., assignor to C. F. Trott, Waterbury, Conn. Smoker's set	404,665	June 4	437	109, 110	47	1310
Whitlock, Ephraim J., assignor of two-thirds to I. E. Byrnes and J. Thake, Brooklyn, N. Y. Water-seal overflow-trap	404,759	June 4	560	143	47	1336
Wichelhaus, Friedrich, Newark, N. J., assignor to Bailey, Farrell & Co., Pittsburg, Pa. Cartridge-crimping tool	404,811	June 4	639	164	47	1352
Wickers, George O., Lawrence, assignor to Davis & Furber Machine Company, North Andover, Mass. Cylinder for carding or other machines	404,812	June 4	640	165	47	1352
Wickham, Thomas, Hub City, Wis. Device for catching animals	404,583	June 4	331	78	47	1288
Widdicombe, Robert H., assignor to Western Electric Company, Chicago, Ill. Electric-cable terminal	404,813	June 4	640	165	47	1352

Name, residence, and invention.	No.	Date.	Monthly volume.		Official Gazette.	
			Spec.	Dr'g.	Vol.	Page.
Williams, John H. (See Lewis, Williams, and Matthews.)						
Williamson, Alfred, Concord, N. H. Ticket and stamp holder	404,584	June 4	333	80	47	1288
Williamson, William A., Newark, N. J. Sash-lift	404,666	June 4	439	110	47	1310
Willis, Don F., assignor of one-half to J. M. and J. S. Griffin, Lynn, Mass. Lasting boots and shoes	404,455	June 4	121	29	47	1248
Wilson, James F., Orange, assignor to T. W. Carr, Marrickville, New South Wales. Grain-cleaning machine	404,456	June 4	122	29	47	1249
Wisner, A. Jackson, Philadelphia, Pa. Railway-signal	404,457	June 4	124	30	47	1249
Wisner, Andrew J., assignor of one-half to M. F. Richardson, Philadelphia, Pa. Coupler for air-brake mechanism on railway-cars	404,760	June 4	561	143, 144	47	1336
Wood, Edmund M. (See Hastings, George W., assignor.)						
Woodhouse, Daniel A., Elizabeth, N. J., and T. V. Forster, Brooklyn, N. Y. Fireman's electric-wire cutter	404,667	June 4	440	110, 111	47	1310
Woodruff, Edmund W., Washington, D. C. Document or letter file	404,458	June 4	127	31	47	1249
Woolworth, Calvin C., *et al.* (See Bunce, Slate, and Rodda, assignors.)						
Worden, George W., Lewiston, N. Y. Fire-escape	404,514	June 4	223	53	47	1266
Wright, Henry A., Spring Garden, Mo. Flood-gate	404,761	June 4	562	144	47	1336
Wright, Wilbur L., assignor of one-half to Sigourney Bros., Bristol, Conn. Combined pot and protector for seedlings, &c	404,585	June 4	334	80	47	1288
Yale & Towne Manufacturing Company. (See Capen, Thomas W., assignor.)						
Yount, Silas T. (See Zerse and Yount.)						
Yule, Carrie G. (See Yule, George, assignor.)						
Yule, George, assignor to C. G. Yule, Newark, N. J. Hat-forming machine	404,459	June 4	130	31, 32	47	1250
Zerbe, James S. (See Fee and Zerbe.)						
Zerse, Otto G., and S. T. Yount, Lafayette, Ind. Vaginal syringe	404,762	June 4	564	144	47	1336

DESIGNS.

Name, residence, and design.	No.	Date.	Official Gazette.	
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Baker, William, Jr., Baltimore County, Md. Bottle	19,125	June 4	47	1223
Bawden, John, *et al.* (See Calely, Edward L., assignor.)				
Bawden, John H., *et al.* (See Calely, Edward L., assignor.)				
Bell, Thomas A., Trenton, N. J. Seggar	19,126	June 4	47	1223
Calely, Edward L., Philadelphia, Pa., assignor to G. Combs, J. and J. H. Bawden, Freehold, N. J. Fire-place lining	19,127	June 4	47	1223
Chesebro, James F., Knoxville, Tenn. Inhaler-tube	19,128	June 4	47	1223
Christesen, Rodolphe W. E., assignor to Russell & Erwin Manufacturing Company, New Britain, Conn. Latch-case	19,129	June 4	47	1223
Collins & Co., T. J. (See Collins, Timothy J., assignor.)				
Collins, Timothy J., assignor to T. J. Collins & Co., Toledo, Ohio. Dressing-case	19,130	June 4	47	1223
Combs, Gilbert, *et al.* (See Calely, Edward L., assignor.)				
Haslam, Lewis, Ravenswood, near Bolton, county of Lancaster, England. Textile fabric	19,131	June 4	47	1223
Meyer, Charles T. and V. E., Bergen, N. J., assignors to E. C. Sampson, New York, N. Y. Oil-cloth	19,132 to 19,138	June 4	47	1223
Meyer, Victor E. (See Meyer, Charles T. and V. E.)				
Russell & Erwin Manufacturing Company. (See Christesen, Rodolphe W. E., assignor.)				
Sagendorph, Longley L., Cincinnati, Ohio. Metallic roofing-plate	19,139	June 4	47	1223
Sampson, Edward C. (See Meyer, Charles T. and V. E., assignors.)				
Schedler, Herman, Jersey City, N. J. Toy money-safe	19,140	June 4	47	1223
Staudinger, Rudolph, Brooklyn, N. Y. Canister	19,141	June 4	47	1223
Wheeler, Orrin A., Chicago, Ill. Toy cap-exploder	19,142	June 4	47	1223
Whitman, Horace F., Philadelphia, Pa. Box	19,143	June 4	47	1223
Wilcox, William P., Cicero, N. Y. Cigar-box	19,144	June 4	47	1223
Winslow, Francis A., Chicago, Ill. Lattice or mesh work	19,145	June 4	47	1223

LABELS.

Name, residence, and title.	No.	Date.	Official Gazette.	
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Chase & Co., L. C., Boston, Mass. "Chase" (for Carriage Robes, Lap Robes, &c.)	5,926	June 4	47	1224
Conger, Walter M., Jr., Newark, N. J. "Conger's Newark Tray"	5,927	June 4	47	1224
Jaques, Francis M., New London, Conn. "Rock Polypode Syrup"	5,928	June 4	47	1224
Ketcham, Samuel J., Chicago, Ill. "East India Pile Remedy"	5,929	June 4	47	1224
Langlés, Justin J., New Orleans, La. "Cakes and Jumbles"	5,930	June 4	47	1224
Langlés, Justin J., New Orleans, La. "Ginger Snaps"	5,931	June 4	47	1224

TRADE-MARKS.

Name, residence, and title.	No.	Date.	Official Gazette. Vol.	Official Gazette. Page.
American Waltham Watch Company, Waltham, Mass. Watch-movements	16,679	June 4	47	1224
Arcadian Mineral Spring Company, Waukesha, Wis. Mineral-waters, ginger-ale, lemonade, tonic drinks, and similar liquids	16,680	June 4	47	1224
Ashmead, Carrie E., Jersey City, N. J. Remedy for piles	16,681	June 4	47	1224
Ballou & Co., I. H., Boston, Mass. Butter	16,682	June 4	47	1224
Brown Paper Company, L. L., Adams, Mass. Paper for ledgers	16,683	June 4	47	1224
Buckingham, Swope & Co., Baltimore, Md. Cigars	16,684	June 4	47	1224
Dessart, Charles H., New York, N. Y. Mask-fasteners	16,685	June 4	47	1224
Fitch & Co., Benj., New York, N. Y. Spring-mattresses and springs for the same	16,686	June 4	47	1224
Gerard, Henri, New York, N. Y. Newspaper	16,687	June 4	47	1224
Gilmor & Co., J. D., New York, N. Y. Biscuits, crackers, wafers, and similar articles	16,688	June 4	47	1224
Gottstein, M. & K., Seattle, Wash. Ter. Whisky	16,661	June 4	47	1224
Hart, Jerome A., San Francisco, Cal. Newspaper	16,662	June 4	47	1224
Hercules Manufacturing Company, Cardington, Ohio. Coffee scourers and polishers	16,691	June 4	47	1224
Herold, Julius, Monzingen, Prussia, Germany. Glue	16,689	June 4	47	1224
Hetherington, John E., New York, N. Y. Electric belts or bands	16,690	June 4	47	1224
Hinchman, James B., Denver, Colo. Cements or compositions for roofing and paving	16,692	June 4	47	1224
Jaques, Francis M., New London, Conn. Cough-mixture	16,693	June 4	47	1224
Kelly Mercantile Company, P. H., St. Paul, Minn. Tea	16,663	June 4	47	1224
Ladd & Coffin, New York, N. Y. Perfumed articles, such as soap, sachet-powders, and the like	16,664	June 4	47	1224
Little, Frank E., St. Louis, Mo. Feather pillows	16,694	June 4	47	1224
Little, Frank E., St. Louis, Mo. Feather pillows	16,695	June 4	47	1224
Little, Frank E., St. Louis, Mo. Feather pillows	16,696	June 4	47	1224
Lloyd, Andrew J., Boston, Mass. Optical goods of all kinds	16,665	June 4	47	1224
Lopez & Co., Manuel, Havana, Cuba. Cigars	16,666	June 4	47	1224
Lopez & Co., Manuel, Havana, Cuba. Cigars	16,667	June 4	47	1224
Lopez & Co., Manuel, Havana, Cuba. Cigars	16,668	June 4	47	1224
Lopez & Co., Manuel, Havana, Cuba. Cigars	16,669	June 4	47	1224
Luckenbach, D. & A., Bethlehem, Pa. Wheat-flour	16,670	June 4	47	1224
MacFarland, Rensalier, Genoa, Ohio. Pills	16,671	June 4	47	1224
McGill, James P., South Bend, Ind. Face-wash	16,672	June 4	47	1224
Morehead & Co., J. Turner, Leaksville, N. C. Knitting-cotton	16,697	June 4	47	1224
Pine Needle Cigar Company, Freehold, N. J. Cigars, smoking-tobacco, and cigarettes	16,673	June 4	47	1224
Prentice, Charles F., New York, N. Y. Optical instruments	16,698	June 4	47	1224
Pickard, Clara, Philadelphia, Pa. Bitters	16,674	June 4	47	1224
Roeckl, J., Munich, Germany. Kid gloves	16,699	June 4	47	1224
Sayre, William H., Newark, N. J. Insect-powders and like preparations	16,700	June 4	47	1224
Spiro, Charles, New York, N. Y. Appliances for taking photographs	16,701	June 4	47	1224
Starley Brothers, Coventry, England. Bicycles, tricycles, and kindred vehicles, and their parts and attachments	16,702	June 4	47	1224
Sterick, Sylvester T. F., Washington, D. C. Game-board	16,675	June 4	47	1224
Suarez & Son, F., New Orleans, La. Cigars	16,676	June 4	47	1224
Thompson, Moore & Co., New York, N. Y. Plug and cut tobacco for smoking and chewing	16,677	June 4	47	1224
White Rock Mineral Spring Company, Waukesha, Wis., and Chicago, Ill. Carbonated ginger	16,678	June 4	47	1224

ALPHABETICAL LIST OF INVENTIONS

FOR WHICH

PATENTS WERE ISSUED ON THE 4TH DAY OF JUNE, 1889.

Invention.	Name.	No.	Date.	Monthly volume.		Official Gazette.	
				Specification.	Drawing.	Volume.	Page.
Addressing-machine	J. W. H. Reisinger	404,732	June 4	523	134	47	1327
Aerated water. Manufacturing and bottling	O. Avedyk	404,462	June 4	137	32	47	1251
Air. Apparatus for purifying atmospheric	W. Hibbert	404,621	June 4	382	92	47	1298
Alarm:							
See Burglar-alarm.							
Animal-catching device	T. Wickham	404,583	June 4	331	79	47	1288
Armature-core for dynamos	J. F. Kester	404,713	June 4	501	128	47	1323
Axle boxes. Dust-guard for car-	L. Goullioud	404,701	June 4	486	123	47	1320
Axle. Carriage-	F. Lebel	404,635	June 4	400	97	47	1302
Baking and roasting pan	C. Preston	404,558	June 4	293	69	47	1280
Bar:							
See Grate-bar.							
Barns. Composite truss for	J. W. Evans	404,612	June 4	372	89	47	1296
Battery:							
See Galvanic battery.							
Bed-bottom and means for tightening and supporting the same.	J. E. Moore	404,722	June 4	511	130	47	1325
Beds. Appliance for sick-	G. S. Brown	404,681	June 4	460	115	47	1314
Bevel	G. H. Waggoner	404,451	June 4	116	27	47	1247
Bicycle	J. F. Breux	404,771	June 4	576	148	47	1339
Bicycle	S. D. Reynolds	404,562	June 4	298	71	47	1281
Binder. Temporary	W. F. Wakeman	404,513	June 4	222	53	47	1266
Blackboards. Crayon-rack for	A. J. Douglass	404,389	June 4	23	6	47	1229
Blast-furnaces. Dust-catcher for	F. H. Treat	404,807	June 4	633	162, 163	47	1350
Board:							
See Center-board. Wash-board.							
Boiler-cleaning apparatus	J. T. Obenchain	404,425	June 4	72	19	47	1240
Boiler-feed	J. H. Rae	404,730	June 4	521	133	47	1327
Boiler-feed regulator	W. O. Gunckel	404,400	June 4	38	10	47	1233
Boiler-feeder	A. F. Jones	404,629	June 4	393	95	47	1300
Boiler-furnace	E. Barrett	404,378	June 4	9	2	47	1226
Bolt-heading machines. Slot-making attachment for.	S. Uren	404,580	June 4	325	78	47	1287
Bolting-reel	J. Warrington	404,810	June 4	638	164	47	1351
Boots and shoes. Lasting	D. F. Willis	404,455	June 4	121	29	47	1248
Bottle-case. Folding	E. L. Walker	404,809	June 4	636	163, 164	47	1351
Bottle-stopper	G., J. G., and M. O. Rehfuss	404,797	June 4	621	159	47	1347
Bottle-stopper	J. J. Sands	404,799	June 4	623	160	47	1347
Box:							
See Fire-alarm signal- box. Stuffing-box.							
Box-fastener	L. Petterson	404,728	June 4	519	133	47	1327
Bracket:							
See Lamp-bracket.							
Brake:							
See Car-brake.							
Brush	C. J. Bailey	404,588	June 4	339	81	47	1289
Buckle	R. G. and R. L. Henry	404,406	June 4	47	13	47	1234
Buckle. Bale-tie	E. L. Clark	404,383	June 4	17	4	47	1228
Buggy-top spring	C. V. Pugh	404,434	June 4	89	22	47	1243
Burglar-alarm	J. W. Roads and T. J. Griffith	404,734	June 4	525	135	47	1328
Burner:							
See Gas-burner. Lamp-burner. Hydrocarbon-burner. Oil-burner.							
Bustle	H. E. Rheubottom	404,798	June 4	622	159, 160	47	1347
Cable-grip	C. S. Chapman	404,601	June 4	355	85	47	1292
Calcining-furnace	D. Lewis, J. H. Williams, and M. Matthews.	404,720	June 4	509	130	47	1325
Camera:							
See Photographic camera.							
Camera-stand	W. H. Fuller	404,396	June 4	32	8	47	1231
Car-body	J. T. Goodfellow	404,535	June 4	262	62, 63	47	1274
Car-brake	W. L. Abbott and V. C. Killin	404,373	June 4	1	1	47	1225
Car-brakes. Device for operating	R. A. Kiskadden	404,418	June 4	64	17	47	1238
Car-coupling	J. E. Bull	404,468	June 4	147	34	47	1253
Car-coupling	J. H. King and B. F. Reed	404,717	June 4	507	129	47	1324
Car-coupling	S. S. McKeand	404,725	June 4	515	131, 132	47	1326

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Car-coupling	V. Nusly	404,552	June 4	285	68	47	1279
Car-coupling	I. Stout	404,743	June 4	539	138	47	1331
Car-coupling	A. Swenson	404,575	June 4	314	75	47	1284
Car-door	C. L. Ward	404,755	June 4	554	141	47	1332
Car-dumping apparatus	A. F. Thayer	404,447	June 4	105	26	47	1346
Car for mines. Tool	J. Treweek	404,510	June 4	219	52	47	1265
Car-heating apparatus	C. A. Marrder	404,492	June 4	183	43	47	1259
Car-roof	G. A. Roberts	404,735	June 4	526	135	47	1328
Car-starter	G. Schmidt	404,563	June 4	300	71	47	1281
Cars. Apparatus for shifting	R. Ramsay	404,656	June 4	426	106, 107	47	1307
Cars. Coupler for air-brake mechanism on railway	A. J. Wisner	404,760	June 4	561	143, 144	47	1336
Cars. Mechanism for extinguishing the lights in railway	I. N. Tillson	404,749	June 4	545	140	47	1332
Cars. Motive mechanism for railway	H. F. and G. F. Shaw	404,441	June 4	98	24	47	1244
Card-clothing thereto. Device for holding cylinders while attaching	I. E. Comins	404,685	June 4	467	118	47	1316
Card-grinding roller	J. S. Dronsfield	404,608	June 4	367	88	47	1295
Card or ticket case	A. Allen	404,515	June 4	225	53	47	1267
Card. Playing	R. F. Foster	404,782	June 4	597	155	47	1343
Carding-engines. Machine for securing clothing to	E. Ashworth	404,587	June 4	336	80, 81	47	1289
Carding or other machines. Cylinder for	G. O. Wickers	404,812	June 4	640	165	47	1352
Carriage	M. Haughey	404,405	June 4	45	12	47	1234
Carriage-top	J. T. Noonen	404,650	June 4	418	103	47	1305
Carrier: *See* Hay-carrier. Straw-carrier.							
Cart	T. Hardy	404,402	June 4	41	11	47	1233
Cart. Road	M. Barnes	404,672	June 4	446	112	47	1311
Cartridge-belt	A. J. Blix	404,677	June 4	452	114	47	1313
Cartridge-crimping tool	F. Wichelhaus	404,811	June 4	639	164	47	1352
Case: *See* Bottle-case. Card or ticket case.							
Casting. Core for	G. H. Bennett	404,673	June 4	448	112	47	1312
Casting steel ingots	E. L. Clark	404,382	June 4	15	4	47	1228
Center-board. Steering	J. H. Hunt	404,626	June 4	388	94	47	1299
Chain-fastener	H. E. Kelley	404,631	June 4	396	95	47	1301
Chain-link machines. Feed mechanism for	J. D. Storie	404,742	June 4	534	137	47	1330
Chains. Grab-link for trace	J. E. Giroux	404,615	June 4	375	90	47	1297
Chair: *See* Convertible chair. Portable chair. Folding chair.							
Checkrein-hook	G. W. Moliere	404,643	June 4	409	100	47	1303
Chisel. Carpenter's	T. H. Palmer	404,554	June 4	289	68	47	1280
Churn	W. M. Shira	404,569	June 4	307	73	47	1283
Churn	H. Sommerfeld	404,443	June 4	100	25	47	1245
Cigar-holder	H. Machtanz	404,644	June 4	409	100	47	1303
Cleaner: *See* Slate-cleaner.							
Cleansing and polishing compound	J. H. Despain	404,387	June 4	21	.....	47	1229
Closet: *See* Water-closet.							
Cloth into strips. Machine for cutting	J. G. McCarter	404,645	June 4	410	100, 101	47	1303
Cloth-marking implement	N. Harris	404,482	June 4	168	39	47	1256
Cloth-sponging machine	W. Hebdon	404,620	June 4	381	92	47	1298
Clothes-wringer	L. C. Parker and B. Voges	404,653	June 4	421	104	47	1306
Clutch and brake. Friction	T. W. Capen	404,776	June 4	588	152	47	1341
Coffee-cleaning machine	C. J. Pickett	404,430	June 4	82	20	47	1242
Coffee-pot	F. A. Hovey	404,707	June 4	491	124	47	1321
Coffer-dam	H. P. Kirkham	404,718	June 4	508	129	47	1325
Coffin	E. C. Manning	404,639	June 4	404	98	47	1302
Collar-fastener	J. Himmelstein	404,409	June 4	52	14	47	1235
Collars. Mold for making glass pads for horse	D Barker	404,766	June 4	568	145	47	1337
Combination-lock	I. A. Shaw	404,568	June 4	305	73	47	1283
Combing-machines. Dabbing-brush apparatus for	J. L. Ballantyne	404,376	June 4	6	2	47	1226
Convertible chair	A Botkin	404,767	June 4	569	146	47	1338
Coupler. Steam-tight	T. M. Jenks	404,710	June 4	498	126, 127	47	1322
Coupling: *See* Car-coupling. Pipe-coupling. Hose-coupling.							
Cultivator	J. W. Johnson	404,711	June 4	499	127	47	1322
Cultivator	C. H. Ruddell	404,437	June 4	91	23	47	1243
Curtain-ring	J. Lines	404,637	June 4	402	98	47	1302
Curtain-ring	J. Lines	404,638	June 4	403	98	47	1302
Curtains. Refinishing	C. Imandt	404,543	June 4	276	.....	47	1277
Cutlery	R. Daine	404,385	June 4	20	5	47	1229
Cutter: *See* Fireman's electric-wire cutter. Straw-cutter.							
Cutting apparatus	H. Lindeström and A. Jernberg	404,548	June 4	280	67	47	1278
Door-check	A. Hursh	404,627	June 4	390	94	47	1299
Door-fastener and alarm. Combined	S. Goulden	404,617	June 4	378	91	47	1297
Door lock and hinge. Combined	L. Binsfeldt and J. Chateau	404,590	June 4	349	82	47	1289
Door lock. Sliding	S. W. Hunton	404,412	June 4	55	15	47	1236
Double-pointed pin	J. H. Birch	404,675	June 4	449	113	47	1312
Drawer. Furniture	J. H. Knaus	404,790	June 4	610	157	47	1345
Drawer-pull	E. P. Nobbs	404,495	June 4	188	44	47	1260
Dray	J. L. Davis	404,688	June 4	471	119	47	1317
Drift and drill catch	J. T. Kenworthy	404,546	June 4	278	66	47	1277
Drill: *See* Ratchet-drill.							
Driving and belt-shifting mechanism	E. R. Hyde	404,709	June 4	494	126	47	1321
Duplicating apparatus	G. H. Davis	404,778	June 4	590	153	47	1341
Dynamos. Brush-spring for	J. F. Kester	404,715	June 4	504	128	47	1324
Dynamos. Detachable brush-holder for	J. F. Kester	404,712	June 4	500	127	47	1322
Electric-cable terminal	R. H. Widdicombe	404,813	June 4	640	165	47	1352

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Electric currents. Distribution by alternating	O. B. Shallenberger	404,566	June 4	302	72	47	1282
Electric currents. System of generators for alternating	O. B. Shallenberger	404,567	June 4	304	72	47	1282
Electric machine. Dynamo-	W. Hochhausen	404,484	June 4	169	39, 40	47	1256
Electric machine or motor regulator	J. F. Kester	404,714	June 4	502	128	47	1323
Electric-machine regulator. Dynamo-	E. P. Clark	404,602	June 4	356	85	47	1292
Electric meter for alternate currents	M. M. M. Slattery	404,801	June 4	625	160, 161	47	1348
Electric motor	C. S. Bradley	404,465	June 4	141	33	47	1252
Electric motor	H. B. Slater	404,661	June 4	433	108	47	1309
Electric motor. Alternating-current	C. S. Bradley	404,466	June 4	143	33, 34	47	1252
Electric motor and regulator	A. Gartner	404,533	June 4	259	62	47	1273
Electric-motor regulator	A. Gartner	404,783	June 4	599	155	47	1343
Electric motors. Safety attachment for	W. S. Paca	404,651	June 4	419	103	47	1305
Elevator: *See* Hydraulic elevator.							
Elevator	A. B. Wall	404,808	June 4	635	163	47	1351
Elevator and conveyer	C. J. Seymour	404,660	June 4	431	108	47	1309
Engine: *See* Hydraulic engine. Steam-engine. Rotary steam-engine.							
Exercising-machine	J. J. Sleeper	404,802	June 4	627	161	47	1348
Exhaust mechanism	J. D. Smith	404,739	June 4	531	136	47	1329
Feed-water heater	J. H. Vail	404,512	June 4	221	53	47	1265
Feed-water heater and regulator	N. Clute	404,683	June 4	462	116, 117	47	1315
Felt boot	J. Vail	404,449	June 4	113	27	47	1247
Fence-post	J. Kelly	404,788	June 4	608	157	47	1344
Fibrous materials. Disintegrating	R. P. Pictet	404,431	June 4	84	21	47	1242
File. Document or letter	E. W. Woodruff	404,438	June 4	127	31	47	1249
Filing-receptacle	A. L. Brown	404,772	June 4	577	148	47	1339
Filtering apparatus	J. W. Hyatt	404,708	June 4	492	125	47	1321
Fire-alarm signal-box. Non-interfering	J. J. Ruddick	404,438	June 4	92	23	47	1243
Fire-arm. Breech-loading	C. G. Bonehill	404,380	June 4	13	3	47	1227
Fire-arm. Breech-loading	W. Dicer and C. M. Barker	404,779	June 4	591	153, 154	47	1341
Fire-arm sight	J. W. Carver	404,598	June 4	351	84	47	1291
Fire-arm sight	J. W. Carver	404,599	June 4	352	84	47	1292
Fire-escape	G. W. Worden	404,514	June 4	223	53	47	1266
Fireman's electric-wire cutter	D. A. Woodhouse and T. V. Forster	404,667	June 4	440	110, 111	47	1310
Fish-hook guard	C. W. Teed	404,747	June 4	544	139	47	1332
Flood-gate	H. A. Wright	404,761	June 4	562	144	47	1336
Fly-trap	J. E. Packard	404,727	June 4	518	132	47	1326
Fly-trap	A. S. Schuyler	404,565	June 4	301	72	47	1282
Folding chair for steamers, &c	C. F. Batt	404,589	June 4	339	81	47	1289
Fork-guard	R. B. B. Clayton	404,777	June 4	589	152	47	1341
Freight elevating and transporting apparatus	W. H. Russell	404,658	June 4	428	107	47	1308
Fruit-stoning machine	J. S. Briggs and W. E. Leach	404,517	June 4	228	55	47	1267
Fuel-saving device	A. C. Greenlee	404,702	June 4	487	123	47	1320
Furnace: *See* Boiler-furnace. Warm-air furnace. Calcining-furnace.							
Furnace-grate. Self-feeding	L. Hopcraft	404,706	June 4	490	124	47	1320
Galvanic battery	W. Frishmuth	404,699	June 4	485	122	47	1319
Gas. Apparatus for manufacturing	W. Clark	404,520	June 4	237	56, 57	47	1269
Gas. Apparatus for the manufacture of	J. F. Toraya	404,750	June 4	547	140	47	1333
Gas. Apparatus for the manufacture of fuel and illuminating	J. W. Harrison and F. Egner	404,404	June 4	43	12	47	1234
Gas-burner. Device for automatically operating the stop-cock of a	C. M. Rider	404,733	June 4	524	134	47	1328
Gas generator. Compound hydrocarbon-	R. Ferguson	404,527	June 4	250	60	47	1271
Gas-washer	J. De Brouwer	404,606	June 4	363	87	47	1294
Gate: *See* Flood-gate. Railway-gate.							
Gate	W. C. Hooker	404,625	June 4	387	93	47	1299
Gate	J. Walker	404,754	June 4	553	141	47	1334
Generator: *See* Gas-generator. Steam-generator.							
Governor. Steam-valve	F. B. Pettengill	404,796	June 4	617	159	47	1347
Grain-binder	O. O. Storle	404,508	June 4	212	50, 51	47	1264
Grain-binding machine	F. Harper	404,479	June 4	164	38	47	1255
Grain-cleaning machine	J. F. Wilson	404,456	June 4	122	29	47	1249
Grain. Heating and steaming	W. H. Smith	404,571	June 4	308	73	47	1283
Grain-press	W. Preston	404,655	June 4	424	106	47	1306
Grate attachment	J. J. Mitchell	404,423	June 4	68	18	47	1239
Grate-bar	G. M. Knight	404,719	June 4	509	130	47	1325
Grate for ranges, stoves, or furnaces	S. J. Buzzini	404,595	June 4	347	83	47	1291
Grinding-machine	R. Conrader	404,686	June 4	469	118	47	1316
Grinding-machine	C. H. Henderson	404,787	June 4	606	156	47	1344
Grinding-mill runner	J. C. Dell	404,607	June 4	365	88	47	1294
Grindstone and mechanism for the same	H. A. Axtell	404,670	June 4	443	111	47	1311
Guard: *See* Fish-hook guard. Fork-guard. Railway-guard.							
Hair-curling device	C. A. G. Pfanne	404,501	June 4	201	48	47	1262
Hair-curling implement	B. L. Toquet	404,664	June 4	436	109	47	1310
Hammer	A. L. De Vol	404,388	June 4	22	5	47	1229
Hammock and canopy support. Combined	J. Gifford	404,614	June 4	374	90	47	1296
Harrow. Pulverizing-	C. La Dow	404,791	June 4	610	157	47	1345
Hat-forming machine	G. Yule	404,459	June 4	130	31, 32	47	1250
Hat-holder and packing-frame	W. M. Levy	404,636	June 4	401	97, 98	47	1302
Hat-wire machine	B. McCusker	404,647	June 4	412	101, 102	47	1304
Hatchway. Self-closing	F. J. Gridley	404,618	June 4	379	91	47	1297
Hatchway. Self-closing	E. J. Herman	404,705	June 4	490	124	47	1320
Hay-cap	W. R. Thatcher	404,577	June 4	322	77	47	1286
Hay-carrier	J. Farrell	404,525	June 4	247	59	47	1271

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Heater:							
See Feed-water heater. Water-heater.							
Heating device. Steam-	H. A. Kroeschell	404,419	June 4	65	17	47	1238
Hinge. Spring-	J. R. Payson, Jr	404,556	June 4	290	69	47	1280
Holder:							
See Cigar-holder. Sash-holder. Hat-holder. Ticket and stamp holder. Necktie-holder. Vessel-holder. Rein-holder.							
Hook:							
See Checkrein-hook.							
Hose-coupling	S. E. Pearce and G. W. Merrill	404,429	June 4	81	20	47	1242
Hotel room-register	C. H. Greenleaf	404,398	June 4	35	9	47	1232
Huller:							
See Seed-huller.							
Hydraulic cylinder for controlling steam-cylinders	C. F. Elmes	404,523	June 4	243	58	47	1270
Hydraulic elevator. Self-regulating	W. E. Nickerson	404,726	June 4	516	132	47	1326
Hydraulic engine	C. E. Foster	404,528	June 4	251	60	47	1272
Hydrocarbon-burner	A. L. Shore	404,442	June 4	99	24	47	1245
Hydrocarbon-burner	W. Snee	404,804	June 4	629	161	47	1349
Incubator	W. Knopff	404,634	June 4	399	96, 97	47	1302
Indicator:							
See Station-indicator.							
Induction-coil	J. F. Kelly	404,630	June 4	395	95	47	1301
Ingot-mold	E. L. Clark	404,381	June 4	14	4	47	1228
Inkstands, &c. Self-closing cover for	I. W. Heysinger	404,539	June 4	267	64	47	1275
Iron direct from its ores. Reducing	C. J. Eames	404,473	June 4	157	36	47	1254
Iron or steel. Determining the temper of	C. A. Caspersson	404,600	June 4	354	.....	47	1292
Jack:							
See Lifting-jack.							
Joint:							
See Rail-joint. Railway-rail joint.							
Key-seats. Machine for cutting	T. W. Broomell	404,679	June 4	457	115	47	1314
Ladders. Adjustable attachment and extension for fire-	J. W. Tully	404,511	June 4	220	52	47	1265
Lamp and toilet-case. Combined	F. Maehr	404,421	June 4	67	17, 18	47	1238
Lamp-bracket. Piano	W. A. Smith	404,570	June 4	308	73	47	1283
Lamp-burner. Argand	P. J. Foulon	404,474	June 4	158	37	47	1254
Lamp-shade	H. Hohenstein	404,540	June 4	272	64	47	1276
Lamps. Filament for incandescent electric	T. D. Bottom	404,463	June 4	138	.....	47	1251
Lantern. Portable electric	W. Frishmuth	404,698	June 4	482	122	47	1319
Lantern. Tubular	R. Hermance	404,538	June 4	266	64	47	1275
Latch. Gate-	P. Dyer	404,391	June 4	26	6	47	1230
Lense. Aplanatic	H. L. H. Schröder	404,506	June 4	210	50	47	1264
Lifting-jack	G. H. Shaffer and J. Bairstow	404,800	June 4	624	160	47	1348
Light:							
See Submarine search-light.							
Liquors. Apparatus for purifying and aging	S. G. Cabell	404,682	June 4	461	116	47	1315
Lock:							
See Combination-lock. Nut-lock. Door-lock.							
Lock	A. S. Boice	404,516	June 4	226	54	47	1267
Locomotive-cab seat	G. W. Stone, Jr	404,662	June 4	434	109	47	1309
Loom-picker	E. S. Grinnell	404,478	June 4	164	38	47	1255
Loom-shuttle binder	S. J. Noiseux	404,649	June 4	417	103	47	1305
Loom shuttle-box mechanism	J. Mathieson	404,640	June 4	405	99	47	1302
Loom stop mechanism	E. Herzig	404,407	June 4	48	13	47	1234
Mandrel. Expansible	P. H. Griffin	404,477	June 4	163	38	47	1255
Map-exhibitor	W. A. Taylor	404,805	June 4	631	162	47	1349
Mash-machine	R. Garich	404,532	June 4	257	61	47	1273
Measuring-vessel	T. S. Cockcroft	404,603	June 4	358	86	47	1293
(Medicine.) Cough-sirup	W. A. Maxwell and O. E. Meddaugh	404,422	June 4	68	.....	47	1239
Metal. Apparatus for mixing molten pig	W. R. Jones	404,415	June 4	60	16	47	1237
Metal. Mixing molten pig	W. R. Jones	404,414	June 4	57	15	47	1237
Metallic wheel	F. H. Ensign	404,611	June 4	370	89	47	1295
Meter:							
See Electric meter. Rotary meter.							
Mold:							
See Ingot-mold. Vault-light mold.							
Motor:							
See Electric motor. Water-current motor. Spring-motor.							
Motor for operating swinging devices	C. J. B. Gaume	404,613	June 4	373	89	47	1296
Mower	H. Lindeström	404,549	June 4	282	67	47	1278
Mower attachment. Lawn-	F. A. Deland	404,690	June 4	474	120	47	1317
Mower attachment. Lawn-	F. A. Deland	404,691	June 4	475	120	47	1318
Napkin-holder table attachment	J. M. Hinds	404,410	June 4	53	14	47	1236
Necktie-fastener	J. Reidl	404,436	June 4	90	23	47	1243
Necktie-holder	G. A. Huewe	404,411	June 4	55	14	47	1236
Nut-lock	G. P. Fuller	404,530	June 4	255	61	47	1272
Oculists and opticians. Trial-frame for	A. L. Smith	404,803	June 4	628	161	47	1349
Oil-burner	G. S. Paine	404,428	June 4	80	20	47	1242
Oil from oil-wells. Device for ejecting	W. Geiser	404,397	June 4	34	9	47	1232
Oiling wheels. Device for	F. W. Harris	404,481	June 4	167	39	47	1256
Ornamental vessel or article	T. B. Gibson	404,785	June 4	603	156	47	1343
Oven. Baker's	J. H. Meier	404,641	June 4	407	99	47	1303
Overflow-trap. Water-seal	E. J. Whitlock	404,759	June 4	560	143	47	1336
Packing for metallic boxes	H. R. Gillingham	404,700	June 4	486	123	47	1320
Packing for piston-rods	J. P. Murray	404,493	June 4	185	44	47	1259
Pan:							
See Baking and roasting pan.							
Paper. Dampening apparatus for rolls of	W. Scott	404,505	June 4	208	49, 50	47	1263
Paper. Machine for making perforations in	S. Wheeler	404,582	June 4	329	79	47	1287
Paper. Making perforations in	S. Wheeler	404,581	June 4	327	78, 79	47	1287
Paper package. Toilet-	O. H. Hicks	404,622	June 4	384	92	47	1298
Papeterie	A. Bühler	404,594	June 4	344	83	47	1290
Paring squashes. Machine for	F. L. Webster	404,452	June 4	117	28	47	1248
Pens or pencils. Spring holder or clasp for	F. J. W. Fischer	404,697	June 4	482	122	47	1319

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Percolator	T. Boyce	404,591	June 4	342	82	47	1290
Petroleum or similar substances. Apparatus for burning	L. P. Guignard and J. Schweizer	404,399	June 4	36	10	47	1232
Photographer's retouching-machine	L. O. Girvin and J. Loff	404,534	June 4	260	62	47	1273
Photographic-camera shutter	R. E. M. Bain	404,375	June 4	5	1	47	1225
Photographic plates. Rack for washing and drying	W. S. Cullen	404,605	June 4	362	87	47	1294
Piano-action	S. Hansing	404,704	June 4	489	124	47	1320
Pin: *See* Double-pointed pin.							
Pipe-coupling	C. F. Hurrel	404,413	June 4	56	15	47	1236
Pipe coupling. Steam-	F. Hanson	404,786	June 4	604	156	47	1344
Pipe-wrench	E. S. Boynton	404,770	June 4	576	147	47	1338
Pipe-wrench	C. L. Dunham	404,781	June 4	596	154	47	1342
Pipe-wrench	J. T. Hawkins	404,619	June 4	380	92	47	1298
Planing and surfacing machines. Feed-roll for	L. P. Hoyt	404,486	June 4	174	41	47	1257
Planing machine. Wood-	F. J. Plummer	404,433	June 4	87	21, 22	47	1242
Plow. Ditching-	R. H. Nogar	404,424	June 4	69	18	47	1239
Plow. Sulky-	J. A. Garber	404,476	June 4	161	37	47	1255
Plow. Swivel-	A. Gale and E. Tremblay	404,531	June 4	256	61	47	1273
Plow. Wheel-	G. Kimball	404,716	June 4	506	128, 129	47	1324
Pocket-books or other articles. Frame for	L. Messer	404,721	June 4	510	130	47	1325
Pocket or note book	E. Weissbrod	404,758	June 4	559	143	47	1336
Polishing compound	G. W. Hastings	404,483	June 4	169	.....	47	1256
Portable chair	L. Engebretsen	404,610	June 4	369	88	47	1295
Post: *See* Fence post.							
Postal-cards. Machine for packaging	W. H. Bunce, D. Slate, and J. Rodda	404,773	June 4	579	148, 149, 150	47	1339
Pot: *See* Coffee-pot.							
Pot and protector for seedlings, &c. Combined	W. L. Wright	404,585	June 4	334	80	47	1288
Press: *See* Grain-press.							
Pressure regulator. Fluid-	W. Ross	404,503	June 4	203	49	47	1263
Pressure regulator. Fluid-	W. Ross	404,504	June 4	206	49	47	1263
Protector: *See* Tree-protector.							
Pulp, &c., from fibrous plants. Machine for scraping the	R. G. Ward	404,756	June 4	555	142	47	1335
Pump. Stock-	G. W. Schroeder	404,737	June 4	528	135	47	1328
Pumping rig. Well	C. C. Stover	404,744	June 4	540	138	47	1331
Punching-machine. Hydraulic	C. C. Klinik, F. Pinkowski, and A. Gross.	404,633	June 4	398	96	47	1301
Quicksand. Apparatus for raising	H. Stoltze, Sr	404,741	June 4	533	137	47	1329
Radiator-loops. Machine for assembling	H. H. Taylor	404,746	June 4	541	138, 139	47	1331
Rail-joint	D. R. Atkinson	404,764	June 4	565	145	47	1337
Railway. Electric	W. Cannell	404,469	June 4	148	35	47	1253
Railway. Electric	L. Daft	404,687	June 4	470	118	47	1317
Railway-gate	A. J. McDonald	404,724	June 4	514	131	47	1326
Railway grip. Cable-	J. H. Pendleton, C. Tiers, A. Bryson, Jr., and L. Moss.	404,499	June 4	196	47, 48	47	1261
Railway grip. Cable-	C. Tiers, J. H. Pendleton, and A. Bryson, Jr.	404,576	June 4	315	75, 76, 77	47	1285
Railway-guard. Automatic	J. V. Reams	404,435	June 4	89	22	47	1243
Railway-rail fastener	C. Netter	404,550	June 4	283	67	47	1278
Railway-rail joint	E. P. Jervey	404,487	June 4	177	41	47	1257
Railway signal	A. J. Wisner	404,457	June 4	124	30	47	1249
Railway signals and points. Working and interlocking	J. Hill and J. P. O'Donnell	404,408	June 4	51	13, 14	47	1235
Railway-track	J. Haish	404,401	June 4	39	11	47	1233
Railways. Drip-pan for elevated	E. A. Trapp	404,751	June 4	549	140	47	1333
Railways. Endless belt for grips for cable	J. H. Pendleton, A. Bryson, Jr., C. Tiers, and L. Moss.	404,500	June 4	199	48	47	1262
Railways. Guide-pulley for cable	J. H. Pendleton and L. Moss	404,498	June 4	193	47	47	1260
Railways. Means for operating trains upon cable	J. H. Pendleton and A. Bryson, Jr	404,497	June 4	189	45, 46	47	1260
Railways. Track-moistening apparatus for electric	E. D. Priest	404,559	June 4	294	70	47	1280
Range	G. H. Phillips	404,502	June 4	202	48	47	1262
Ratchet-drill	H. Brinkmann	404,592	June 4	343	82	47	1290
Razor	F. Ascheuer	404,763	June 4	565	144	47	1337
Reciprocating machinery. Mechanism for cushioning traversing beds of	H. P. Feister	404,394	June 4	29	8	47	1231
Reel: *See* Bolting-reel.							
Register: *See* Hotel-room register.							
Regulator: *See* Boiler-feed regulator. Electric-motor regulator. Electric-machine regulator. Pressure-regulator. Electric-machine or motor regulator.							
Rein-holder	W. F. Turman	404,579	June 4	324	78	47	1286
Ring: *See* Curtain-ring.							
Ring-dies. Making	F. Ecaubert	404,562	June 4	242	57	47	1270
Rods. Machine for manufacturing cylindrical	H. H. Post	404,654	June 4	422	104, 105	47	1306
Roller: *See* Card-grinding roller.							
Roller for leveling snow and roads	I. B. Babcock	404,671	June 4	445	112	47	1311
Rotary meter	P. Ball	404,374	June 4	2	1	47	1225
Rotary steam-engine	H. L. Phelps	404,557	June 4	292	69	47	1280
Rubber boot	E. F. Bickford	404,674	June 4	449	113	47	1312
Rubber boot or shoe	J. L. Joyce	404,416	June 4	62	16	47	1237

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Ruler	A. Brown and P. C. Payette	404,593	June 4	343	82	47	1290
Saddle. Harness-	H. Aschenbach and J. W. Theobald	404,669	June 4	442	111	47	1311
Sash-fastener	R. J. Buchanan	404,467	June 4	146	34	47	1252
Sash-holder	O. P. Hammarlund and E. Larson	404,537	June 4	264	63	47	1274
Sash-lift	W. A. Williamson	404,666	June 4	439	110	47	1310
Saw. Hand-power	J. M. Vaughn	404,753	June 4	551	141	47	1334
Saw-swaging machine	T. B. Hite	404,623	June 4	385	93	47	1298
Saws. Apparatus for straightening	D. Simonds	404,738	June 4	529	136	47	1328
Saws. Cleaner for cotton-gin	J. C. Godwin	404,616	June 4	377	90, 91	47	1297
Scraper. Road-	G. N. Miller	404,793	June 4	614	158	47	1345
Scraper. Road-	O. E. Moats	404,794	June 4	615	158	47	1346
Scraping machine. Road-	M. G. Bunnell	404,774	June 4	584	150, 151	47	1340
Screen: *See* Window-screen. *See* Locomotive-cab seat.							
Seed huller. Cotton-	W. R. Fee and J. S. Zerbe	404,696	June 4	479	121, 122	47	1319
Separator: *See* Slime-separator.							
Sewing-machine cover	N. R. Van Horn	404,752	June 4	550	141	47	1333
Sewing machine. Shoe-	J. L. Treharn	404,448	June 4	106	26	47	1246
Sewing-machines. Cutting mechanism for button-hole	F. W. Ostrom and J. W. Boynton	404,427	June 4	77	19	47	1241
Sewing-machines. Shuttle and race mechanism for	F. D. Parker	404,555	June 4	289	69	47	1280
Shackle	J. James and A. D. Goodenough	404,544	June 4	276	66	47	1277
Sheet-metal package	F. G. Caldwell	404,596	June 4	349	84	47	1291
Shirt	B. Galland	404,475	June 4	160	37	47	1255
Signal: *See* Railway-signal.							
Skate-roller	C. J. Kintner	404,547	June 4	279	66	47	1278
Slate-cleaner	J. M. McFarland	404,795	June 4	616	159	47	1346
Sled	L. B. Pickett	404,432	June 4	87	21	47	1242
Slime-separator	P. H. Dunagan	404,521	June 4	241	57	47	1270
Smoke-consumer	J. C. Butler	404,775	June 4	587	151	47	1341
Smoker's set	W. S. Whiting	404,665	June 4	437	109, 110	47	1310
Spinning-spindle support	J. Duffy	404,609	June 4	368	88	47	1295
Spring: *See* Buggy-top spring. Vehicle-spring.							
Spring-motor	R. Faries	404,526	June 4	249	59, 60	47	1271
Stamp-canceler	B. Summers	404,574	June 4	313	75	47	1284
Stamping or other machines. Safety apparatus for	T. J. Holmes	404,624	June 4	386	93	47	1299
Stand: *See* Camera-stand.							
Station-indicator	V. L. Cunningham	404,384	June 4	18	5	47	1228
Steam-engine	A. H. F. Straub	404,573	June 4	311	74	47	1284
Steam-generator	J. A. Eno	404,524	June 4	246	58, 59	47	1270
Steam-generator	W. Snee	404,740	June 4	532	136	47	1329
Steel direct from ore. Producing	W. F. M. McCarty	404,723	June 4	512	131	47	1325
Steering apparatus	A. C. Dunn	404,472	June 4	152	35, 36	47	1254
Stereotyping. Matrix for	F. Schreiner and A. Schott	404,564	June 4	301	71	47	1282
Stilt	H. Temple	404,896	June 4	632	162	47	1350
Stools or chairs. Spring-back for	W. P. James	404,628	June 4	392	94	47	1300
Stopper: *See* Bottle-stopper.							
Stove and utensils. Portable cooking	A. S. Tomkins	404,578	June 4	323	77	47	1286
Stove or range attachment	C. B. Tefft	404,748	June 4	544	139	47	1332
Stove-pipe anchor and flue-cleaner	L. H. Oldfield	404,553	June 4	288	68	47	1279
Stoves. Automatic extinguisher for car-	H. Levoy and F. Dagwell	404,420	June 4	66	17	47	1238
Stoves. Safety oil-can attachment for vapor-	H. Ruppel	404,439	June 4	95	24	47	1244
Straw-carrier	G. Akerson	404,460	June 4	135	32	47	1251
Straw-cutter	W. C. Bayless	404,379	June 4	10	3	47	1226
Street-surfaces Guide-bar for lining up the curves of	J. M. Mack	404,491	June 4	182	43	47	1259
Stuffing-box	L. C. S. Frick	404,529	June 4	253	61	47	1272
Submarine search-light	A. L. Dutton	404,390	June 4	24	6	47	1229
Switch-points. Mechanism for operating	J. M. Swem	404,446	June 4	102	25	47	1245
Switch-stands. Lock-house for	W. J. McCarthy	404,646	June 4	411	101	47	1304
Swivel	H. E. Kelley	404,632	June 4	397	96	47	1301
Swivel	J. F. Sears and H. E. Kelley	404,659	June 4	430	107	47	1308
Syringe. Vaginal	O. G. Zerse and S. T. Yount	404,762	June 4	564	144	47	1336
Table	J. M. Davis	404,689	June 4	473	119	47	1317
Tannic extracts. Purifying	L. Saarbach	404,440	June 4	97	.....	47	1244
Teeth. Filling	E. C. Taylor	404,745	June 4	540	138	47	1331
Teeth. Mold for the manufacture of artificial	W. R. Hall	404,703	June 4	488	123	47	1320
Telegraph apparatus	E. B. Shafer	404,507	June 4	211	50	47	1264
Telegraph. Duplex fire-	S. A. Chase	404,519	June 4	235	55	47	1268
Telegraph. Fire-alarm	S. A. Chase	404,518	June 4	232	55	47	1268
Telephone-support	C. W. Brown	404,680	June 4	459	115	47	1314
Telephone-transmitter	E. S. Drake	404,471	June 4	151	35	47	1253
Terret with separable shank	E. E. Hardy	404,403	June 4	42	12	47	1234
Ticket and stamp holder	A. Williamson	404,584	June 4	333	80	47	1288
Ticket-selling machine. Automatic	J. W. Vaughn	404,450	June 4	114	27	47	1247
Tire. Wheel-	R. W. Donmoyer	404,692	June 4	476	120	47	1318
Tongs. Roofing-	C. G. Blum and P. Listeman	404,678	June 4	453	114, 115	47	1313
Tools to handles. Device for securing	F. H. Thompson and G. P. Tormey	404,663	June 4	435	109	47	1309
Trap: *See* Fly-trap. Overflow-trap.							
Tree-protector	H. L. Webber	404,757	June 4	558	143	47	1335
Trimmer: *See* Wick-trimmer.							
Trousers-stretcher	D. F. McNair	404,648	June 4	416	103	47	1304
Truck. Car-	G. E. Blaine	404,676	June 4	450	113, 114	47	1312
Tubs, &c. Cover for butter-	H. C. Carter	404,597	June 4	350	84	47	1291

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Umbrella-exhibitor	F. Harrington and B. L. Carter	404,480	June 4	166	39	47	1256
Umbrella or parasol	F. S. Evans	404,695	June 4	478	121	47	1318
Unison device	G. F. Oehmen	404,426	June 4	75	19	47	1240
Under-vest	C. F. North	404,551	June 4	284	67	47	1278
Valve	F. Egner and J. W. Harrison	404,392	June 4	27	6, 7	47	1230
Valve for air-brakes. Release-	G. A. Boyden	404,768	June 4	573	147	47	1338
Valve-gear	M. I. Welch	404,453	June 4	118	28	47	1248
Valve-gear for compound engines	J. C. H. Stut	404,509	June 4	216	51, 52	47	1264
Valve. Pressure regulating or reducing	E. Andre	404 586	June 4	334	80	47	1288
Valve. Safety-	J. M. Colven	404,684	June 4	466	117	47	1316
Valve. Time-	P. G. Hubert	404,542	June 4	275	65	47	1276
Vault-light mold	D. Barker	404,765	June 4	567	145	47	1337
Vehicle	H. Arenberg	404,461	June 4	136	32	47	1251
Vehicle. Folding	J. McBoyle	404,494	June 4	186	44	47	1259
Vehicle-spring	S. H. Raymond	404,560	June 4	295	70	47	1281
Vehicle. Two-wheeled	W. Page	404,496	June 4	188	45	47	1260
Velocipede	A. Easthope	404,693	June 4	476	120	47	1318
Velocipede	H. A. King	404,490	June 4	181	42	47	1258
Vessel-holder	J. P. Eustis	404,694	June 4	478	121	47	1318
Veterinary mouth-speculum	C. E. Palmer	404,652	June 4	420	104	47	1306
Voltmeter	L. Daft	404,470	June 4	150	35	47	1253
Wagon-body raiser	W. S. Bourne	404,464	June 4	140	33	47	1252
Warm-air furnace	B. F. Reynolds	404,561	June 4	296	70	47	1281
Wash-basin	P. G. Hubert	404,541	June 4	273	65	47	1276
Wash-board	I. N. Poe	404,729	June 4	520	133	47	1327
Washer: *See* Gas-washer.							
Washing-machine	R. Joel	404,545	June 4	277	66	47	1277
Washing-machine	Z. Randel	404,731	June 4	522	134	47	1327
Water-closet	A. Elmendorf	404,393	June 4	27	7	47	1230
Water-conveyer	F. D. Dowd	404,780	June 4	595	154	47	1342
Water-current motor	F. G. Johnson	404,488	June 4	178	41, 42	47	1258
Water-heater	E. N. Gates	404,784	June 4	601	155	47	1343
Water-heater	S. Spiro	404,572	June 4	310	74	47	1284
Water-meters. Sealing device for	G. S. Follansbee	404,395	June 4	31	8	47	1231
Water-purifying apparatus	O. S. Howes	404,485	June 4	173	40	47	1257
Water-reservoir	H. Daue	404,386	June 4	20	5	47	1229
Water-wheel	L. Middleton	404,642	June 4	408	99, 100	47	1303
Weather-strip	A. M. Stodard	404,445	June 4	101	25	47	1245
Wheel: *See* Metallic wheel. Water-wheel.							
Wheel	M. C. Root	404,657	June 4	427	107	47	1308
Wheelbarrow	W. E. Kilborn	404,789	June 4	609	157	47	1344
Whip-socket	E. Allen	404,668	June 4	441	111	47	1311
Wick-trimmer	J. L. Sanford	404,736	June 4	527	135	47	1328
Windmill	A. J. Corcoran	404,604	June 4	359	86, 87	47	1293
Window	H. Maeurer	404,792	June 4	612	158	47	1345
Window-screen	J. S. White	404,454	June 4	120	29	47	1248
Wire matting	I. Kinney	404,417	June 4	63	16	47	1237
Wire-stretcher	E. Guthridge	404,536	June 4	263	63	47	1274
Wire-weaving apparatus	H. Steddom, Jr	404,444	June 4	100	25	47	1245
Wood. Convertible machine for grooving and saw-ing	E. F. Barnes	404,377	June 4	8	2	47	1226
Wood-working tool	I. R. Joslin and G. T. Lawrence	404,489	June 4	180	42	47	1258
Wrench: *See* Pipe-wrench.							
Wrench	E. S. Boynton	404,769	June 4	575	147	47	1338
Wringer: *See* Clothes-wringer.							

DESIGNS.

Design.	Name.	No.	Date.	Official Gazette. Vol.	Official Gazette. Page.
Bottle	W. Baker, Jr	19,125	June 4	47	1223
Box	H. F. Whitman	19,143	June 4	47	1223
Canister	R. Staudinger	19,141	June 4	47	1223
Cigar-box	W. P. Wilcox	19,144	June 4	47	1223
Dressing-case	T. J. Collins	19,130	June 4	47	1223
Fire-place lining	E. L. Calely	19,127	June 4	47	1223
Inhaler-tube	J. F. Chesebro	19,128	June 4	47	1223
Latch-case	R. W. E. Christesen	19,129	June 4	47	1223
Lattice or mesh work	F. A. Winslow	19,145	June 4	47	1223
Oil-cloth	C. T. and V. E. Meyer	19,132 to 19,138	June 4	47	1223
Roofing-plate. Metallic	L. L. Sagendorph	19,139	June 4	47	1223
Seggar	T. A. Bell	19,126	June 4	47	1223
Textile fabric	L. Haslam	19,131	June 4	47	1223
Toy cap-exploder	O. A. Wheeler	19,142	June 4	47	1223
Toy money-safe	H. Schedler	19,140	June 4	47	1223

TRADE-MARKS.

Title.	Name.	No.	Date.	Official Gazette. Vol.	Official Gazette. Page.
Belts or bands. Electric	J. E. Hetherington	16,690	June 4	47	1224
Bicycles, tricycles, and kindred vehicles, and their parts and attachments.	Starley Brothers	16,702	June 4	47	1224
Biscuits, crackers, wafers, and similar articles	J. D. Gilmor & Co	16,688	June 4	47	1224
Bitters	C. Pickard	16,674	June 4	47	1224
Butter	I. H. Ballow & Co	16,682	June 4	47	1224
Cements or compositions for roofing and paving	J. B. Hinchman	16,692	June 4	47	1224
Cigars	Buckingham, Swope & Co	16,684	June 4	47	1224
Cigars	M. Lopez & Co	16,666	June 4	47	1224
Cigars	M. Lopez & Co	16,667	June 4	47	1224
Cigars	M. Lopez & Co	16,668	June 4	47	1224
Cigars	M. Lopez & Co	16,669	June 4	47	1224
Cigars	F. Suarez & Son	16,676	June 4	47	1224
Cigars, smoking-tobacco, and cigarettes	Pine Needle Cigar Company	16,673	June 4	47	1224
Coffee scourers and polishers	Hercules Manufacturing Company	16,691	June 4	47	1224
Cough-mixture	F. M. Jaques	16,693	June 4	47	1224
Face-wash	J. P. McGill	16,672	June 4	47	1224
Feather pillows	F. E. Little	16,694	June 4	47	1224
Feather pillows	F. E. Little	16,695	June 4	47	1224
Feather pillows	F. E. Little	16,696	June 4	47	1224
Flour. Wheat	D. & A. Luckenbach	16,670	June 4	47	1224
Game-board	S. T. F. Sterick	16,675	June 4	47	1224
Ginger. Carbonated	White Rock Mineral Springs Company.	16,678	June 4	47	1224
Gloves. Kid	J. Roeckl	16,699	June 4	47	1224
Glue	J. Herold	16,689	June 4	47	1224
Insect-powders and like preparations	W. H. Sayre	16,700	June 4	47	1224
Knitting-cotton	J. T. Morehead & Co	16,697	June 4	47	1224
Mask-fasteners	C. H. Dessart	16,685	June 4	47	1224
Mattresses and springs for the same. Spring	B. Fitch & Co	16,686	June 4	47	1224
Mineral-waters, ginger-ale, lemonade, tonic drinks, and similar liquids.	Arcadian Mineral Spring Company	16,680	June 4	47	1224
Newspaper	H. Gerard	16,687	June 4	47	1224
Newspaper	J. A. Hart	16,662	June 4	47	1224
Optical goods of all kinds	A. J. Lloyd	16,665	June 4	47	1224
Optical instruments	C. F. Prentice	16,698	June 4	47	1224
Paper for ledgers	L. L. Brown Paper Company	16,683	June 4	47	1224
Perfumed articles, such as soap, sachet-powders, and the like.	Ladd & Coffin	16,664	June 4	47	1224
Photographs. Appliances for taking	C. Spiro	16,701	June 4	47	1224
Pills	R. MacFarland	16,671	June 4	47	1224
Remedy for piles	C. E. Ashmead	16,681	June 4	47	1224
Tea	P. H. Kelly Mercantile Company	16,663	June 4	47	1224
Tobacco for smoking and chewing. Plug and cut	Thompson, Moore & Co	16,677	June 4	47	1224
Watch-movements	American Waltham Watch Company.	16,679	June 4	47	1224
Whisky	M. & K. Gottstein	16,661	June 4	47	1224

LABELS.

Title.	Name.	No.	Date.	Official Gazette. Vol.	Official Gazette. Page.
"Cakes and Jumbles"	J. J. Langlés	5,930	June 4	47	1224
"Chase" (for Carriage Robes, Lap Robes, &c.)	L. C. Chase & Co	5,926	June 4	47	1224
"Conger's Newark Tray"	W. M. Conger, Jr	5,927	June 4	47	1224
"East India Pile Remedy"	S. J. Ketcham	5,929	June 4	47	1224
"Ginger Snaps"	J. J. Langlés	5,931	June 4	47	1224
"Rock Polypode Syrup"	F. M. Jaques	5,928	June 4	47	1224